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ON THE NOMENCLATURE OF TRANSVERSE PRESENTATION AND OF VERSION, WITH REMARKS ON THE CHOICE OF THE LEG SEIZED [1]

By D. BERRY HART, M.D., F.R.C.P.Ed., F.R.S.Ed., etc.,

Lecturer on Midwifery and Diseases of Women, Surgeons' Hall; Physician, Royal Maternity Hospital; Senior Assistant Gynecologist, Royal Infirmary, Edinburgh

CASES of transverse presentation at full time and in labour demand your most careful consideration and prompt treatment, as on your skill will depend both the mother's and child's life. Although such cases have been studied and treated for centuries, we are yet far from having even a good and intelligible nomenclature, especially for the varieties of version, and a division of opinion still exists, for instance, as to which leg is the better for seizure in order to perform this necessary operation accurately. Let me therefore direct your attention to—

1. *The nomenclature of the positions in transverse presentations.*
2. *The nomenclature of the varieties of version.*
3. *The choice of the leg seized.*

1. *The nomenclature of the position in transverse presentation.*—The best nomenclature is that which divides transverse presentation into dorso-anterior and dorso-posterior positions, and each of these again into left acromio-iliac and right

[1] Part of two systematic lectures given at Surgeons' Hall, winter session, 1899-1900.

acromio-iliac, according as the acromion is to the left or right side.

We thus have—

Dorso-anterior { Left acromio-iliac. / Right acromio-iliac.

Dorso-posterior { Left acromio-iliac. / Right acromio-iliac.

It is better to name the positions from the acromion, as it is the presenting part often, and fits in with the definition of position I have already given you.[1]

It is not so exact to substitute cephalo-iliac for acromio-iliac.

The nomenclature "left scapulo-anterior," and so on, is concise, but little else can be said in its favour. Note, further, that right and left and anterior and posterior always refer to the mother and not to the fœtus, unless expressly stated.

2. *The nomenclature of the varieties of version.*—The present nomenclature is very confusing. You will appreciate this when I say that it leads to indefiniteness in version questions when set in the final professional examination. There may, for example, be room for doubt as to what the examiner wants when he asks for the method of performing podalic version, and this is most perplexing to candidates.

The terms applied to version are either descriptive of the method by which the version is performed or of its aim. Thus podalic version or cephalic version expresses the fact that the aim of the version is to substitute respectively the lower limb or the head for the presenting part. On the other hand, bipolar version, combined external and internal version, or external version, are all terms descriptive of method.

Inasmuch as we usually substitute the lower limb for the presenting part, the forms described by method terms are also podalic. The mere term podalic is thus not definite enough. Another source of confusion is that the internal hand requires to be passed deeply, *i.e.* above the retraction ring in

[1] Position is the relation to the upper strait of the pelvis of that portion of the presenting part which should rotate to the front in internal rotation. In spontaneous evolution, if completed, the shoulder rotates to the front.

certain cases, whereas in the bipolar method of Hicks it should not be passed beyond the presenting part, *i.e.* about the level of the retraction ring. The term combined internal version does not, however, indicate which is meant. To be exact, we must define the varieties of versions, both as to method and aim; or, as we might put it, the definition term of version requires $\frac{\text{method}}{\text{aim}}$. Put in this way—

$$\text{Cephalic version} = \frac{\text{Bimanual external manipulation}}{\text{Head.}}$$

$$\text{Bipolar version of Hicks} = \frac{\text{One hand external and one internal, but not deep}}{\text{Lower limb.}}$$

$$\text{Combined version of J. Y. Simpson} = \frac{\text{Hand external, and hand internal and deep}}{\text{Lower limb.}}$$

We must, however, have a more compact terminology, and what I suggest is this. There are three great varieties of version. The first is cephalic version; this is now seldom used in practice, is practically performed by external manipulation, and thus its terminology is seldom needed. We can speak of it, therefore, as cephalic version by combined external manipulation. The old way of performing version was simply to pass the hand into the uterus, seize a foot or both feet, draw down and complete the operation. Sir James Simpson was the first to impress the profession with the importance of also aiding with the external hand. His words are: "we derive the greatest possible aid from manipulating the uterus and infant with the other hand placed *externally* on the surface of the abdomen." It seems to me that it would be advantageous to apply the term "Simpson's combined version" to those cases where the internal hand is passed into the uterine cavity proper to seize a foot, the external hand being also used in the version. This is the method for fixed cases.

It is to Braxton Hicks, however, that we owe the perfecting of version so far as the combined internal and external method is concerned. Barnes undoubtedly helped in this evolution by the valuable description he gave of it in his Obstetric operations.

Hick's method, where the internal fingers do not pass beyond the presenting part, while the external hand aids the

manipulations, usually has the terms Hick's bipolar version applied to it.

We have thus three clearly defined varieties of version, as follows :—

Combined external—cephalic.
Simpson's combined version—podalic.
Braxton Hick's bipolar version—podalic.

In the second and third we might for shortness speak of Simpson's podalic and Hick's podalic. This would practically give method and aim.

3. *The choice of the leg seized.*—Here again Simpson was the first to attract attention by advocating the seizure of the further knee, *i.e.* of the knee opposite the presenting shoulder. Galabin on the other hand advocated the near foot as a rule, while Nagel has given us by far the most complete discussion of that subject. The whole question, however, is not thoroughly threshed out as yet, and I therefore purpose reconsidering it.

What follows, however, applies in the main to cases of transverse presentation, where the liquor amnii has in part drained off and the version rendered difficult. In a simple case one can turn easily whichever leg is taken, and the leg seized will come to the front in the end. In difficult cases, where we need to employ Simpson's combined version, it is however of importance to seize the leg which gives the safer operation.

Simpson's paper is of considerable interest, and was written *à propos* of a case of transverse presentation delivered by him at the Edinburgh Maternity in 1845, at least that is the date of the report in the *Edinburgh Monthly*. The position was dorso-posterior, right acromio-iliac.

In this case Simpson seized the further knee and delivered. He apparently delivered the head by the Smellie grip, but the description is not very clear (" two fingers . . . over the neck and introducing two others into its mouth "). Simpson's reason for seizing the further foot was that he wished to rotate the body on a transverse axis as well as on its longitudinal axis. The latter rotation he held must raise the presenting shoulder, *i.e.* turn the fœtus. His own words are, " by carrying the knee diagonally across . . . the abdomen of the child to the os uteri, we both . . . *flex and rotate* at the same time the

trunk of the infant, and in doing so the semi-rotation of the trunk inevitably carries up the presenting arm" (p. 371, "Selected Works," vol. i., 1871). He adds, though not quite logically, that if both knees are drawn down we should merely flex the body, and in this Barnes agrees with him. It should be noted that this case narrated, a dorso-posterior transverse, is the favourable one for the seizure of the upper knee. Simpson does not discuss the proper seizure in dorso-anterior positions.[1]

The next important paper is by Galabin, of Guy's Hospital. It would be difficult to condense Dr Galabin's concise and very able paper, but his conclusions give the gist of it and are as follows :—

1. The rotation of the fœtus on its antero-posterior axis by means of the lower leg is generally effected at a greater mechanical advantage, and therefore by a less force than the combined rotation on its transverse and longitudinal axis by means of the upper leg ; while it is sufficient to produce elevation of the shoulder, unless the fœtus is dead and flaccid or uterine rigidity extreme, and the upper leg may with no diminished advantage be afterwards brought down if required.

2. If the lower leg be taken and a noose placed upon the prolapsed arm, the operator has complete command of the anterior arm in the subsequent extraction.

3. By taking the lower leg the more usual dorso-anterior position is not converted by the version into a dorso-posterior position, a point of very minor importance, but one which may, in some cases, be worthy of consideration.

Galabin, like Simpson, practically considers the seizure of the leg in relation to the feasibility of version, and does not discuss the question of the mechanism of the breech after it is engaged. He states, however, that he has found in dorso-posterior positions where he seized the upper knee that the back remained posterior after the version, and was not converted into a dorso-anterior.

[1] It is of some interest to note that Martin Barry was the house surgeon, and that "during the labour the patient was bled and had an ounce of antimonial wine exhibited in f ℥ doses to promote the dilatability of the cervix uteri. Shortly before turning ℥ i of laudanum was exhibited in order to moderate the uterine contraction and facilitate the process of turning" (p. 364). This was two years before the discovery of chloroform.

It is also to be noted that Galabin's excellent diagrams represent the fœtus as dorso-anterior, the more favourable position for seizure of the lower leg, and I have already pointed out that Simpson illustrates his view on a dorso-posterior case which is the more favourable position for the seizure of the further knee.

Nagel's paper is a very able and exhaustive one, and he throws a good deal of additional light on the subject. The point of Nagel's paper is that he does not consider the question of the leg to be seized merely from the point of the accomplishment of version, but indicates that we should seize the leg whose half breech will pass sooner to the symphysis, thus taking the standpoint of the older observers (Baudelocque and Hohl) and of his own master, Gusserow.

I have already stated that Galabin found clinically that in dorso-posterior position the back was still posterior after version, but Nagel notes that in nineteen cases of dorso-posterior or where he seized the further leg, each became dorso-anterior after version.

It is quite true, however, that when the breech is low the seizure of the further leg in dorso-posterior may allow the back to remain posterior after version. When, also in dorso-anterior cases, the breech is in the fundus, one may, owing to the necessary want of obliquity in the traction, convert a dorso-anterior into a dorso-posterior. Let us now discuss each position, given the leg seized.

In the dorso-anterior left acromio-iliac, if the near foot be seized the fœtus will remain dorso-anterior, and the half breech of the limb pulled on rotate through quarter of a circle to the front; there will be thus slight rotation of the trunk and little difficulty with the arms.

If, however, in this same position one seized the further leg, the position would become dorso-posterior; one would get a long rotation of the breech and risk of disturbance of arms. This long rotation is made up of a first part, where the breech accommodates itself to the transverse of the brim; and a second portion, the ordinary internal rotation.

What I have just said for the dorso-anterior left acromio-iliac holds for the dorso-anterior right acromio-iliac.

In the dorso-posterior left acromio-iliac, the further leg

when drawn down will convert the primitive position into a dorso-anterior with subsequent short rotation of the breech; while if the nearer foot be taken, we get the primitive position remaining posterior, with consequent long rotation. We may therefore put the rule for seizure of a knee or leg in transverse cases, where one performs what I have termed Simpson's version, as follows:—Seize the knee, or leg, which maintains the dorso-anterior position or converts the dorso-posterior into a dorso-anterior, *i.e.* take the further limb for dorso-posterior cases, the nearer for dorso-anterior cases. When, however, in dorso-anterior the breech is in the fundus, traction on the nearer leg may convert it into a dorso-posterior; and when the breech is near the os in dorso-posterior, traction on the further leg may not alter the posterior position of the back after version, owing again to the want of the necessary obliquity in the pull.

I may sum up this controversy, therefore, by saying that for dorso-posterior cases Simpson's advice is best, while for dorso-anterior ones, Galabin's plan is right. Each of these observers, therefore, stated half the truth.

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ON THE ETIOLOGY OF HEAD-SHAKING WITH NYSTAGMUS (SPASMUS NUTANS) IN INFANTS[1]

By JOHN THOMSON, M.D.,

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THE condition treated of in the following paper is a functional co-ordination neurosis of a harmless nature which affects young infants and has a short, well-defined clinical course. It has been described by Henoch, Raudnitz, and other continental writers as Spasmus Nutans, and by Gee, Hadden, Aldrich,

[1] Reprinted from "International Contributions to Medical Literature," Festschrift in honour of Dr A. Jacobi, 1900.

TABLE I—THIRTY-FIVE CASES OF HEAD-SHAKING.

Number.	Name.	Sex.	Age, in Months, at beginning of Symptoms.	Age when First seen.	Month in which Symptoms began.	Month when First seen.	Approximate duration.	If Rickety.	Other Facts as to General Health, Injury, etc.	Eyes affected by Nystagmus.	Direction of Nystagmus.	Usual Direction of Head-shaking.	Other Symptoms Present.
1	Ellen M.	F.	6	6	Nov. '89	Dec. '98		Yes.	Began during severe bronchitis.	Both.	Lat. & rot.	Forward.	
2	John D.	M.	9	9	Jan. '90	Jan. '90	2½ mos.	Yes.	Began during convalescence from measles & broncho-pneumonia.	Left.	Lateral.	Lateral.	
3	Mary N.	F.	6	9	Jan. '90	April '90	+3 ,,	No.	Very well.	Left.	Lateral.	Lateral.	
4	Marion S.	F.	5	12	Feb. '90	Sept. '90	+8 ,,	Yes.	Pale, weakly.	Both.	Lateral.	Forward & lateral.	Internal strabismus.
5	Adam C.	M.		13		March '91		Yes.	Had congenital syphilis.	None.	None.	Lateral.	
6	William S.	M.	6	6	Dec. '91	Jan. '92	6 ,,	Yes.	Gums tender.	Both.	Vertical.	Forward & lateral.	Nystagmus of upper lids. Shaking of left arm.
7	James P.	M.	11	13	Dec. '91	Feb. '92	+5 ,,	Yes.	Gums tender.	None.	None.	Lateral.	Facial irritability.
8	Evelyn B.	F.	8	8	Jan. '93	Feb. '93	+2 ,,	Yes.		Both.	Lateral.	Forward & lateral.	
9	Alice L.	F.	7	8	Dec. '92	Feb. '93		Yes.	Began one month after measles and broncho-pneumonia. Gums tender.	Both.	Lat. & rot.	Forward & lateral.	Hippus.
10	Elizabeth B.	F.	5	7	Jan. '93	March '93		Yes.		Both.	Lat. & rot.	Lateral.	Hippus.
11	George D.	M.	11	14	Jan. '93	April '93	3 ,,	Yes.		Right.	Lateral.	Forward & lateral.	
12	Isabella D.	F.	3	11	Oct. '93	June '94		Yes.	Gums tender.	Both.	?	Lateral.	
13	John McM.	M.	6	6	Jan. '95	Jan. '95	2 ,,	Yes.	Began one month after bronchitis. Gums tender.	Both.	Lateral.	Lateral.	
14	John B.	M.	8	9	Jan. '95	Jan. '95		Yes.	Began one week after a fall.	Both.	Rotatory.	Lateral.	
15	Marion H.	F.	10	13	Jan. '95	April '95		Yes.	Anæmic. Eczema capitis.	Right.	Rotatory.	Lateral.	
16	James C.	M.	7	13	Dec. '94	May '95	+6 ,,	Yes.	Died in a convulsion.	None.	None.	Lateral.	Laryngismus. Convulsions.
17	Ethel B.	F.		8		May '95		Yes.		Both.	Lateral.	Lateral.	
18	Ellen D.	F.	8	9	Jan. '96	Feb. '96		Yes.	Began during pneumonia.	Both.	Rotatory.	Lateral.	Hippus.
19	Kate McG.	F.	8	11	Dec. '95	March '96		Yes.	Began soon after a fall.	Right.	Lateral.	Lateral.	Facial irritability.

20	George P.	M.	8	9	Jan. '97	Feb. '97		Yes.	Began 3 days after a fall.	Both.	Lateral.	Lateral.		
21	William V.	M.	5	11	Aug. '96	Feb. '97		Yes.		Both.	Rotatory.	Forward.	Facial irritability. Laryngismus.	
22	Elen H.	F.	8	21	Jan. '97	Feb. '97	+ 13 mos.	Yes.		Both.	Rotatory.	Lateral.	Hippus.	
23	Katie B.	F.	4	5	Jan. '97	Feb. '97	+ 4 ,,	Yes.		Both.	Vertical.	Forward & lateral.	Nystagmus of upper lids.	
24	Thomas C.	M.	11	13	Jan. '97	March '97	+ 3 ,,	Yes.		Both.	Lateral.	Forward & lateral.		
25	Samuel D.	M.	10	12	Jan. '97	March '97	6 ,,	Yes.		Both.	Vertical.	Lateral.		
26	Thomas G.	M.	6	10	Dec. '96	March '97	11 ,,	Yes.	A Mongolian imbecile.	Both.	Lateral.	Lateral.		
27	Barbara K.	F.	8	11	Aug. '97	Nov. '97		Yes.		Both.	?	Forward & lateral.		
28	David S.	M.	6	7	Dec. '97	Jan. '98	1½ ,,	Yes.		Left.	Lateral.	Forward.	Shaking of left arm.	
29	Elizabeth W.	F.		10		Jan. '98		No.	Bronchitis.	Both.	Lateral.	Forward & lateral.		
30	George S.	M.	10	11	Jan. '98	Feb. '98		Yes.	Began immediately after a fall. Otorrhœa.	Both.	Lateral.	Lateral.		
31	Victoria P.	F.	9	13	Jan. '98	April 98	9½ ,,	Yes.		Left.	Vertical.	Forward & lateral.		
32	Nina Y.	F.	12	13	Jan. '99	Feb. '99		Yes.		Both.	Lateral.	Lateral.		
33	Joanna McL.	F.	16	19	Dec. '98	March '99		Yes.		Both.	Lateral.	Lateral.		
34	Mary D.	F.	6	9	Dec. '98	April '99		Yes.	Began shortly after vaccination.	Both.	Vertical.	Forward.		
35	Aggie M.	F.		12		June '96		Yes.		None.	None.	?		

TABLE II.—FOUR CASES OF NYSTAGMUS ONLY.

Number.	Name.	Sex.	Age, in Months, at beginning of Symptoms.	Age when first seen.	Month in which Symptoms began.	Month when first seen.	Approximate duration.	If Rickety.	Other facts as to General Health, Injury, etc.	Eyes affected by Nystagmus.	Direction of Nystagmus.	Usual direction of Head-shaking.	Other Symptoms present.
1	Annie W.	F.	10	10	Nov. '87	Nov.		Yes.	A Mongolian imbecile.	Left.	Lateral.	None.	
2	Richard D.	M.		18		March '92		Yes.		Both.	R. vert. L. lat.	,,	
3	Janet S.	F.	9	11	Dec. '92	Feb.		Yes.		Both.	L. rot. R. lat.	,,	
4	Thomas S.	M.	5	9	Dec. '93	March		Yes.		Both.	Lateral.	,,	Twitching of facial muscles.

Peterson, Dickson, and others, under such names as Head-shaking, Head-jerking, Head-nodding, and Head-rotating, Gyro-spasm, Nodding Spasm, etc. We have selected two names for use here, Spasmus Nutans, because it has been so widely employed, and Head-shaking, because it seems to describe what takes place rather better than any one of the other English designations. From the various sources mentioned in the list of references, I have gathered details regarding eighty-eight cases; and the following remarks are founded on these and on thirty-five cases of my own (see Table I).

The clinical features have been so carefully given by previous writers that it will not be necessary to dwell much upon them. It may, however, be mentioned that the two cardinal symptoms—involuntary head movements and ocular nystagmus—are both present in the great majority of cases. In some, however, only head-shaking is observed. We also occasionally find nystagmus occurring alone under such circumstances and with such characters as to make it extremely probable that it is of the same nature as that which occurs with spasmus nutans. This, however, cannot as yet be regarded as proven, and therefore such cases of the kind as I have seen have been placed in a separate table.

The intimate connection between the head movements and those of the eyes is illustrated by two facts. When closure of the unsteady eyes (or eye) takes place naturally in sleep, or is artificially produced by the application of wadding and a bandage (Caillé, Raudnitz), the head-shaking ceases. Also when the head is passively steadied by the hand the nystagmus increases, or may appear for the first time.

The child has often a peculiar trick of turning his head to one side and staring fixedly out of the opposite corners of his eyes at things. While doing this he has sometimes a peculiar pre-occupied look. It is important, however, to note that not only is the patient's intellect not seriously affected in spasmus nutans, however long it lasts, but also that, however severe it is in degree, it does not produce the slightest dulness and is not followed by the least sign of exhaustion. The movements seem to be intensified by mental action, as when the child's attention is attracted to any object. These cease during sleep.

The diagnosis of spasmus nutans is generally easy. Eclampsia Nutans or the Salaam Convulsion has been at times mistaken for it, but is quite a different disease, being a form of epileptic seizure associated with serious cerebral defect. What connection the head-shaking of infants has with the similar movements occasionally met with under a great variety of circumstances in adults and older children (*e.g.* chronic hydrocephalus, idiocy, hysteria, acute feverish conditions, etc.), need not be discussed here. It may, however, be said in passing, that head-nodding and nystagmus (separate or combined) lasting during life, is obviously an essentially different condition from the transitory neurosis with which we are at present dealing.

The following case illustrates a rare condition occurring in infancy which may give rise to difficulty in diagnosis :—

On December 2, 1899, I saw, through the kindness of my friend Dr T. J. Thyne, a wasted baby boy, twelve months old, who was reported to be suffering constantly from head-nodding. The child, though weakly and dyspeptic, was evidently quite intelligent. His mother was in a lunatic asylum. The symptoms dated from May or June, and were said not to have changed materially since their commencement.

The movements, although similar in direction, were usually much slower and of greater range than those characteristic of ordinary spasmus nutans. There was sometimes a deliberate shaking of the head from side to side. After this had gone on for a few minutes, there would be a pause—apparently for a rest—and then a simple forward nodding would begin. This nodding was usually accompanied by a corresponding movement of the shoulders, and often the whole trunk was swayed backwards and forwards. The rate of the movements varied considerably from time to time. There was never any nystagmus.

The nodding or shaking was evidently commenced each time intentionally—the child seemed to like doing it. After the movements had gone on for some time he looked tired and a little confused, especially if they had been rapid ; then there was a pause. If anything attracted his attention while the head-shaking was going on, the movement stopped at once, and only began again when the child's interest began to flag. The movements sometimes took place when he was lying down, and they were said to have been frequently observed during sleep.

The nature of this case was obviously quite different from that of ordinary spasmus nutans. It was not, like that condition, a purely involuntary affection, but seemed rather a sort of "bad habit." Similar voluntary swaying movements backwards and forwards of the trunk are not very uncommon in

young babies who are not well looked after, though the head is not usually implicated. They may be associated with masturbation, but are quite as often, I believe, entirely independent of that habit. The "Head-banging" described by Dr Gee seems to be another closely-related condition.

Etiology.—We need not consider here the muscles concerned in the production of the head movement, nor yet the nervous tracts involved. With regard to the latter, however, it may be mentioned that the nervous mechanism, whose function is at fault, is evidently that which includes the semi-circular canals in its circuit and which regulates the co-ordination of the movements of the eyes with those of the head. Dr Alex. Bruce tells me that the nucleus of Deiters (one of the end-nuclei of the vestibular nerve lying at the lateral angle of the fourth ventricle) is in all probability the seat of the disturbance. He infers this from its connections with the oculo-motor nuclei and with the anterior cornua of the cord.

Various facts regarding the children and their surroundings have been regarded by different writers as of etiological importance. We shall refer to some of these and then discuss their relative importance.

Age.—More than three-fourths of the published cases (including my own) began between four and twelve months old. This corresponds to the period during which the child is slowly learning to co-ordinate the movements of the eyes with those of the head. At the beginning of it he has great difficulty in moving the two sets of muscles together, and even towards the end he has very little skill in following a moving object with his head and eyes.

Cases have been described beginning as early as one month (Schönberg) and six weeks old (Gee), but no details have been published of any commencing later than the twentieth month. In the case of second attacks, however, the symptoms may still be present in the third year.

Sex.—In my series, as in others, the female sex predominates (20 to 15). The proportions in previously reported cases were 37 to 25.

Predisposition to Nervous Disease.—There seems little to indicate that the families to which the children belong are specially neurotic. I have, however, met with two instances

in which two children in the same family were affected with head-shaking (Cases 6 and 28; 8 and 17). Hadden, also, records one instance of this, and Henoch mentions the occurrence of the disease in twins. Seven of my earlier cases were kept under observation for periods varying from four to seven years. None of them suffered from any special nervous ailment within that time, except one who had enuresis. In a small proportion of the cases there is a history of convulsions or laryngismus.

Mental Condition.—Generally, the intellect is quite normal. The only exception to this I have seen has been in the case of so-called "Mongolian" imbeciles. One of my cases of nystagmus alone, and one of spasmus nutans, were of this type. My friend, Dr J. Pirie, has had another case of head-shaking in an imbecile of the same kind. At the age at which head-shaking develops, "Mongolian" imbeciles are usually not much behind other children in intellectual acquirements. Even then, however, although often active and lively, they are decidedly backward in co-ordinating muscular movements.

Reflex Irritation (Teething, &c.).—No one probably now regards dentition as an essential or important cause of spasmus nutans. Henoch, however, maintains that in some cases reflex irritation connected with teething has some influence in its causation; I have seen cases, such as he describes, where the cutting of a tooth was followed by improvement, and the return of irritation in the gum by a distinct relapse. In one case (23), in which the symptoms began at four months, teething had started a month before. Apart from dentition, obvious sources of reflex irritation are very rare.

Debilitating Illnesses.—In many cases the symptoms set in during or soon after some severe illness, such as bronchitis, broncho-pneumonia, or measles.

Defective Light in the Home.—This seems to be a most important, if not an essential, element in the causation. In miners' nystagmus—a form of the complaint which resembles that in spasmus nutans in many ways—defective light is probably always a determining cause, along with unnatural straining upward of the eyes, with the body in a cramped position, and a bad atmosphere (Graefe). Raudnitz was the first to draw attention to the occurrence of spasmus nutans in

dark houses and during the dark months of the year. He points out that the head-shaking seems to be secondary to the nystagmus, and thinks that the latter is due to a strain of the eyes, probably from the infant constantly attempting to look towards the window.

I have collected the following facts, all of which seem best explained on the supposition that deficient light in the home is a necessary predisposing cause.

1. The homes of about half of my cases were visited, and they were invariably found to be very insufficiently lighted. Usually they occupied the lower stories of high houses in narrow, overshadowed streets. Of those I was not able to visit, a large number were situated in particularly sunless localities. In every instance the house was in a more or less densely populated part of the town and at some distance from any open space. I have never met with a case in a child who lived in the country. In spite of extensive inquiries, I have never heard of, nor yet seen, a single case of the disease occurring in a well-to-do-family. Other forms of nervous disease in infants—such as laryngismus and convulsions—are, of course, quite common among the upper classes.

2. In the very large majority of my cases the symptoms began in either December or January. The details of the thirty cases in which the date of commencement is noted are as follows :—

July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.
0	2	0	1	0	9	17	1	0	0	0	0

On tabulating the dates of commencement in the forty-six previously published cases, in which this point is noted, we find that in them also more began in December and January than in the other months, although the proportions are not so striking.

July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.
0	0	2	4	5	9	12	6	6	1	1	0

These facts are best represented in the form of a chart (see p. 72).

Dr Alex. Buchan, Secretary of the Scottish Meteorological Society, has kindly furnished me with the following statement of the average number of hours of sunshine in each month of the year in Edinburgh :—

July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.
138	145	104	83	49	24	34	57	98	123	165	157

From this it will be seen that December and January are much the darkest months.

In four cases in which there was a second attack or relapse, after a long period (viz., Hadden's 5th and Raudnitz's 1st, 4th and 9th cases), this took place in every instance in the month of January.

3. We have not enough information with regard to the distribution of cases of spasmus nutans to draw many conclusions. From what little we have, however, it seems tolerably certain, not only that the disease is confined to towns, but also that it is much commoner in some towns than in others. The explanation of this lies probably in the degree of sunlight prevalent, in the amount of it which reaches the inside of the dwellings of the poor, and especially in the extent to which the children are kept indoors.

The following are some of the facts from which these conclusions are drawn. They have been gathered mostly from previously published papers (especially that of Raudnitz) and from hospital reports.

From the United States only a few cases have been reported in spite of the great interest taken among the profession there in the diseases of infancy. I have not found a single case reported from either France or Italy; and Dr Pinilla of Madrid tells me that the disease is very rare in Spain. In Vienna it is not at all common (*v. infra*). In Buda-Pesth it is rather more frequently seen (15 cases in 3 years, out of 52,213 patients at the Children's Hospital). In Prague the disease is comparatively common. In Raudnitz's Kinder-Ambulatorium there, there were 8 cases of spasmus nutans in 2 years among 1223 new patients. In Basel, 2 cases occurred among 6154 children. In Berlin, Henoch tells us, he has seen a great many cases. Schönberg published 10 cases seen in 10 years in Christiania. In London, the disease cannot be very rare, considering the number of cases which Hadden saw within a few years. In Edinburgh, head-shaking is certainly commoner than in many other places. During eleven years (1889-99), among 21,752 children seen by me for the first time at the Sick Children's Hospital and the New Town Dispensary, there were 35 cases of head-shaking and 3 of nystagmus alone. I have not been able to obtain any statistics about other towns in Scotland, but from opinions expressed by friends in Glasgow, Aberdeen, and Dundee, I gather that the disease is not so prevalent in these cities as in Edinburgh.

Head injury.—Instances of head injury having preceded the commencement of the symptoms have been recorded by Hadden, Peterson, Aldrich, and Norrie. In Hadden's 4th case there were two relapses following falls on the head. In four of my cases there was a distinct history of a fall, in which the head was struck, having occurred shortly before the symptoms began.

Rickets.—According to Kassowitz, spasmus nutans is practically always due to rickets, just as laryngismus and the common form of convulsions are. In this opinion he is supported by Schönberg and Hochsinger. Henoch, Hadden,

and Raudnitz, on the other hand, record cases in children who were not rickety, although a large proportion of their cases showed signs of this disease.

Out of my 35 cases, 33 showed undoubted signs of rickets. The others I was not perfectly sure about. Even if these two were quite free from rickets, 33 out of 35 (94·2 per cent.) is a very large proportion,[1] and it seems impossible to escape the inference that rickets exerts a strongly predisposing influence.

It is questionable, however, whether the connection between rickets and spasmus nutans is of exactly the same kind as that between rickets and laryngismus, convulsions, tetany and facial irritability (Chvostek's phenomenon). The following are reasons for thinking that it is in some way different :—

1. Cases of spasmus nutans, when placed on anti-rachitic regimen, do not (in my experience at least) improve in the strikingly rapid way that is generally observed in the case of these other neuroses.

2. While the four other neuroses are much less frequently found alone than in combination (2, 3, or 4 together), it is comparatively rare to find any of them along with spasmus nutans (4 times in my 35 cases).

3. In some places where rickets and the four associated neuroses are very common, spasmus nutans is rare. The following is one instance of this. Among Kassowitz's out-patients in Vienna the percentage of rickets is greater than in the corresponding class in Edinburgh, and the proportion of laryngismus is large. In six years (1881-86) he saw 370 cases of laryngismus (*Beiträge*, N.F., iv., 1893, S. 63)—an average of 61·6 cases per annum. During three years (1896-98) I have seen 61 cases—a yearly average of 20·3. In eight years (1884-91), however, Kassowitz saw only 9 cases of spasmus nutans (*Beiträge*, N.F., i. 1892, S. 165); while in eleven years (1889-99) there were 35 typical cases among my out-patients.

From a review of the etiological factors we may conclude that the age of the patients, the absence of sufficient

[1] Of 3000 children under two years examined by me as out-patients between June 1895 and September 1899, only 1406 (46·9 per cent.) were undoubtedly rickety.

light in their surroundings, and the presence of rickets are the most important influences in determining the onset of the disease ; likewise that anything which temporarily or permanently lowers the vitality may predispose to its occurrence.

There are many analogies between chorea minor and head-shaking, and we get, I think, an interesting view of the causation of the latter if we group the various etiological factors as Sir Wm. Gowers does those of chorea.

Chorea, according to Gowers, has three leading factors in its causation. There is, *firstly*, the age. As Sturges used to insist, chorea is a sort of morbidly exaggerated fidgetiness. Naturally, therefore, it almost always occurs in later childhood —the characteristically fidgety age.

Secondly, there is the neurotic element. Under this heading may be included the facts : (*a*) that chorea mostly occurs in neurotic families ; (*b*) that there is often a history of overstrain, mental, emotional, or otherwise ; and (*c*) that a shock to the nervous system, such as a fright, is often the obvious determining cause of an attack.

Lastly, in a large proportion of the cases there is "a blood-state allied to, but not identical with, that which causes acute rheumatism."

Now, in spasmus nutans we have a similarly complicated causation. There is, *firstly*, a special age (4-12 months). During this the co-ordination of the movements of the eyes with those of the head is growing more perfect, but it is still pre-eminently the age of unsteady eyes and waggling movements of the head.

Secondly, there is the nervous element. Whether it occurs in specially nervous families is uncertain, but it certainly often sets in during the weakness of convalescence, and nearly always during the excitable period of teething. The most probable explanation of the striking association of these cases with insufficient light is, as we have seen, that this gives rise to eye-strain and consequent exhaustion of the cerebral centres. We have also seen that there is sometimes the history of a blow on the head—which means, of course, a fright.

Lastly, the presence of rickets is important as a predisposing cause.

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CLINICAL NOTE ON A CASE OF ECLAMPSIA AT THE SIXTH MONTH OF PREGNANCY, TREATED BY SALINE INFUSION AND VERATRUM VIRIDE

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ON several occasions lately the subject of the treatment of eclampsia has been brought before the notice of the Edinburgh Obstetrical Society. The present clinical note breaks no new ground; it simply adds one further observation to the cases which have been brought before the Society by Dr Robert Jardine of Glasgow, in which the chief means of treatment has been the hypodermic injection of saline infusions under the breast.

I was called in consultation to see the patient, who was under the care of Dr John Stevens of Merchiston, on May 18th. She was thirty-nine years of age; had suffered from no renal trouble previously so far as was known, but had,

according to her mother's statement, always had a "weak back"; she had scarlet fever when two years old. Her first pregnancy took place three years ago, went to the full term, and ended in a normal labour; during it there was no dropsy or other abnormal symptoms, but as the patient was not then residing in Edinburgh full details of the confinement were not obtainable; the child was born alive but died in three days thereafter, from "blood-poisoning" it was stated. The present pregnancy, her second, had reached the sixth month, when Dr Stevens was hurriedly summoned to see her on account of fits. She had only just arrived in the district, and Dr Stevens had not previously seen her. This was on the morning of May 18th, 1900. For a week previously she had noticed that her urine was unusually pale, and for about a month had suffered from some swelling of the legs. At three o'clock in the morning she awoke with a severe pain in the epigastrium soon followed by violent headache. At 6 A.M. the first fit occurred, and thereafter a convulsion took place about once in each half-hour, the patient partially regaining consciousness between the attacks. These continued till 8 A.M., when Dr Stevens saw her; she was then in a state of coma, and the pupils were contracted to the size of pin-points. At 9.30 two drachms of magnesium sulphate were given by the mouth, a convulsion almost immediately supervening; then an injection of chloral hydrate, 20 grs., and potassium bromide, 40 grs., was administered per rectum. No convulsion then occurred for an hour and a half, and it was during this interval of freedom from eclamptic seizures that I first saw the case. The urine passed during the preceding night, before the supervention of the eclampsia, was pale, slightly turbid, sp. gr. 1014, albumen very copious (deposit of about $\frac{2}{3}$). There was no blood reaction and the microscope showed nothing.

At ten o'clock I saw her. Her pulse was 136, of high tension, and she was nearly quite unconscious. The cervix was undilated. Digitalis fomentations were applied to the loins and hot bottles were placed around her. A few minutes past eleven o'clock another convulsion took place, typical of eclampsia gravidarum in all respects. Ten minims of the tincture of veratrum viride were then injected hypodermically; soon afterwards the pulse was 124, and before half-

past eleven it was 100. About twelve noon I slowly injected between a half pint and a pint of saline infusion into the loose tissue below both breasts. Two convulsions occurred soon after, and 15 minims of tincture veratrum viride were given hypodermically. Several ounces of urine were drawn off about this time by catheter, the patient being quite unconscious; it contained blood and a very large amount of albumen, more than two-thirds but not quite three-fourths, and under the microscope numerous epithelial and granular tube casts were seen. The convulsions, it ought to have been stated, were controlled by the inhalation of chloroform.

The condition of the patient was now manifestly so grave that further measures had to be considered, and after discussion we decided to induce therapeutic abortion. Of course this meant also to perform fœticide, for the fœtus was alive, and being only at the sixth month could not be expected to survive its transference from an intra-uterine to an extra-uterine environment; yet we regarded the fœticide as justifiable, for if abortion were not induced it seemed certain that the fœtus would perish with the mother, and if it were induced then it would die also but the mother might survive. At least such was our reasoning at the time.

I accordingly commenced to induce abortion about 1 P.M. I could get one finger easily into the uterus, but the internal os was undilatable, and the second finger could not be introduced even after half an hour. Neither the Champetier de Ribes' bag nor the Barnes' bag that I had with me would pass the internal os. Nevertheless uterine pains began to occur and continued to occur, but at long intervals, so I decided not to force labour, especially as there had now been an interval of two hours and a half since the last convulsion. The vagina was douched and a bougie fixed in the cavity of the uterus. A convulsion occurred at three o'clock, and another at five; on both these occasions 10 minims of the tincture of veratrum viride were given, and on the second occurrence 20 grs. of chloral and 40 grs. of bromide of potash were also administered by the rectum. The pulse was now 112 and the temperature 99°, and no further fit occurred till eight o'clock, and that was the last one. Another rectal injection of bromide and chloral was given, and the bougie was left in the uterine cavity

Labour progressed very slowly during the night. At 4 A.M., May 19, 2 drachms of sulphate of magnesia were given by the mouth; the bowels moved once shortly afterwards, and again at 8.30 A.M. freely. At 9.25 A.M. the temperature was 98.4° and the pulse 96. The uterine bougie was removed, and it was found that the os uteri was now the size of a four-shilling piece. The patient was conscious and was taking hot milk and water with sodium bicarbonate in it and imperial drink. The skin was moist.

At 1 P.M. (May 19) the bowels moved again, and at 2 P.M. the fœtus was born (head presentation) and lived for some little time. The placenta was easily extracted; it did not appear abnormal; there was very little hæmorrhage. At 3 P.M. the temperature was 98.8° and the pulse 88. The urine passed in the evening, on boiling, showed albumen about one-half. The patient had a good night, and next morning (May 20) the urine was found to give albumen about one-sixth, blood still present, microscopically casts (granular and hyaline with a few epithelial), pus cells and blood corpuscles. Along with the diminution in the albumen it was noticed that the casts were fewer. During the day the skin continued to act freely, the mental condition was quite satisfactory, and both at mid-day and in the evening nearly a pint of urine was passed. On May 21 the urine was not so turbid as it had been, it was about normal in amount, and there was a small quantity of albumen. On May 22 the breasts were somewhat swollen and painful, and were accordingly firmly bandaged. The urine was rather more turbid and the amount of albumen was slightly increased, being about one-eighth. In the evening the urine was clearer and paler and showed less albumen; it had still a slight blood reaction, there were no casts, but there were some pus corpuscles and a few blood cells, also several large spiculated balls of urate of sodium. On May 23 the condition of the breasts had improved, and there was good and steady progress; the urine contained less albumen, a slight blood reaction was evident, and there were some pus cells, a few blood corpuscles, some balls of urate of sodium and some uric acid crystals. On May 24 the improvement continued; on May 25 there was only a trace of albumen, and no blood reaction; on May 26 the patient got some light milk food; on May 27 there was

still a trace of albumen, and so also on May 29; and on June 3 the urine was normal. Since then the patient had steadily progressed and is now convalescent.

Remarks

The case just narrated was a typically severe one of eclampsia gravidarum: there were in all about fifteen convulsions between six in the morning and eight in the evening, and the urine was loaded with albumen and contained also blood and tube casts. The recovery was most encouragingly complete, and taking into account all the circumstances, wonderfully rapid. It has to be noted that the hypodermatic injection of the saline infusion was not the only means of treatment employed; the convulsions were controlled by chloroform, the tincture of veratrum viride was injected up to forty-five minims, rectal injections of bromide and chloral were given, magnesium sulphate was administered by the mouth, and the induction of abortion was carried out. Doubtless all these measures played their part in achieving the satisfactory terminal result; but in attempting to distribute justly the praise, it is important to remember that the cessation of the convulsions and the general improvement in the patient's condition occurred eighteen hours before the birth of the living fœtus. Indeed uterine contractions were few, far between, and ineffective till the morning succeeding the day of the patient's illness. Further, the fœtus was born alive, and therefore it is not permissible to invoke fœtal death as a cause of the cessation of the fits. On the whole I am inclined to give most of the credit of the improvement which took place to the saline infusion and the tincture of veratrum viride; but doubtless the chloral contributed also to the result, and possibly the progress of labour, although extremely slow, by emptying the uterus, made the final recovery complete.

The supervention of eclampsia or of other grave maternal states due to pregnancy before the period of viability of the fœtus is, according to the teaching of the modern French school of obstetricians,[1] the only real indication for the performance of medical or therapeutic or prophylactic abortion,

[1] Pinard, A., "De l'avortement medicalement provoqué," *Ann. de gynéc.*, vol. li., p. 1., Jan. 1899.

for the operation has been known by all these names. Narrowness of the pelvic canals, however great, is not any longer regarded as a sufficient indication for therapeutic fœticide—the induction of premature labour, when the fœtus is of course viable, does not come into this category of cases—for the development of the operations of the Cæsarean section and of symphysiotomy has made it possible to deliver the mother of a living child with a working minimum of danger to herself. Even in the case which has been narrated it will remain in my mind as an unsettled speculation whether the fœticide, for so it turned out to be, was justifiable. Had I desisted from interference after the giving of the saline infusion, might not the pregnancy have gone on till at any rate the fœtus was viable? I am inclined to think not, but I cannot say so with assurance.

An interesting point with regard to the power of the urine of the eclamptic to resist putrefactive change may be noted. Some of the urine passed the night before the convulsions appeared was obtained; it contained albumen, no blood and no tube casts; and it was tested and set aside in a corked bottle with no special precautions (No. 1). The next specimen was that drawn off by catheter at the time when the fits were at their worst; it contained albumen, blood, and tube casts; and it was treated in the same way (No. 2). The next urine obtained was after the delivery; it still contained albumen and casts in large amount; it also was placed aside in a corked bottle (No. 3). The next four specimens, representing the urine of the next four days, during which the abnormal constituents were gradually disappearing (Nos. 4, 5, 6 and 7), are now, more than three weeks afterwards, all alkaline in reaction, and are showing signs of decomposition; and the specimens taken still later, which are from a week to two weeks old, all show more marked evidences of decomposition. The first three specimens, however, which are of course much older than the others, are all acid still: the first one passed before the fits, although acid, is now beginning to show slight signs of decomposition; the second one, drawn off during the convulsions, is quite undecomposed still, although nearly a month in bottle; and the third one, which is also acid, is equally sweet. It would seem from these facts, which were carefully noted by Dr Stevens, that the urine passed during

and immediately after the eclampsia (and to a slightly less degree before the fits also) was not a suitable medium for the growth of the moulds and spores which usually quickly form on the surface of urine put aside in non-sterilized bottles.

A CASE OF INFANTILE SCURVY[1]

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INFANTILE Scurvy is far from being a common disease in this part of the country. Not only is the case I bring under your notice to-night the first example of it I have met, but none of the other medical men to whom I have spoken have met with it, even though some of them have had very large experience in diseases of children.

When cases of this disease were first described many years ago in England, Germany and America, they were regarded as examples of acute rickets, or hæmorrhage rickets. Ashley and Wright, in the second edition of their "Text-book on the Diseases of Children," published in 1892, incline to the view that the disease is an exaggerated or extreme form of the anæmia which is usually found in severe rickets; and Owen, in his "Surgical Diseases of Children," published in 1897, prefers the name of scurvy rickets, or hæmorrhage rickets. It is to Barlow, whose name is now associated with the disease (Barlow's disease), and to Cheadle, that we are indebted for pointing out its ætiology and pathology. They have shown that although this condition has features in common with rickets as well as with hæmophilia and syphilitic periostitis or Parrot's disease, still, in causation, symptoms, and in treatment, it is similar to scurvy, as it appears in the adult; the differences being due to the different conditions of the bones in the infant as compared with the adult.

The name, Infantile Scurvy, which Barlow has given the disease, seems to me to be the most appropriate, as that term distinguishes it from other diseases somewhat similar but due to other causes. While rickets seems due to the absence of

[1] Read before the Aberdeen Medico-Chirurgical Society.

fats in the food, and Parrot's disease to be caused by a morbific agent in the blood, and hæmophilia to be an inherited diathesis, infantile scurvy seems to be due to the absence of some element in the food, the nature of which we are unacquainted with, but which may be described as the anti-scorbutic element. Children who have become affected with the disease, have either been nursed by mothers who themselves were suffering from scurvy, such cases being an exceeding small minority, or they have been brought up on sterilized milk, or more frequently some patent food, with the complete absence of fresh milk or fresh food in any form whatever in their diet.

And here let me remark, that although infantile scurvy is rare in this part of the world, we must not conclude that in its milder forms it will continue to be so infrequent. When we take into account the growing number of patent foods, and the glowing laudations of their value which appear in the advertisement columns of our medical and daily papers, and the increased tendency of all classes to use these foods for their children as a substitute for fresh milk, these things, along with the rapid increase of the use of sterilized milk for feeding infants, would lead us to expect an increase of infantile scurvy, and would point to the need of medical men seeing that the child gets some anti-scorbutic substance to supply the lack of it in its regular diet.

Infantile scurvy, therefore, appears in children from six to eighteen months old who have been improperly fed. The child, which may be well-nourished but pale, will become peevish and fretful, especially on being handled, more contented when undisturbed. It will not move its legs readily and they are tender to the touch. Soon some swelling of the lower limbs will appear, generally asymmetrical. As the swelling increases the limb becomes pseudo-paralytic and the child screams on the slightest touch. The swelling is due to sub-periosteal hæmorrhage, which strips off the periosteum and causes the pain and tenderness. Other bones may become affected, *e.g.* the ribs, scapula, clavicle, skull, and face bones, while proptosis may result from effusion behind the eyeball. Hæmorrhages may occur in the intermuscular spaces. If the teeth have appeared, the gums become spongy and purple, bleeding readily on touch. A remarkable appear-

ance of the chest, well seen in the present case, is often found. The sternum, with the adjacent costal cartilages and a portion of the contiguous ribs seems to have sunk back bodily as though pressed back by violence. Fracture of the limbs may occur. Gastro-intestinal troubles may arise and the child may die from diarrhœa or exhaustion or some complication as bronchitis or pneumonia. . Under anti-scorbutic treatment, however, the disease runs a favourable course, marked improvement appearing in a week or two. The swelling of the bone subsides through absorption of the blood, the fracture becomes united, and complete recovery may take place.

The following are the notes in the case I bring before your notice :—

W. F., aged seven months, was admitted to the Royal Aberdeen Hospital for Sick Children on 19th March. He was the illegitimate child of apparently healthy parents, but was under average at birth. When put on cow's milk he suffered from gastro-intestinal trouble and convulsions. Allan .Hanbury's No. 1 food was tried and the child was reared on that food without milk, according to the directions given on the tin, the No. 2 food being given without milk at four months. The child was always peevish, fretful, and suffered at intervals from gastro-intestinal trouble. Grey powder was frequently administered. At five months, swelling and tenderness of left thigh appeared. Grey powder was given regularly with some improvement of its condition but never recovery. Raw meat juice was ordered, but as was subsequently discovered, was never given. Before admission to the hospital cow's milk was added to the food, but as recovery did not result, the medical attendant ordered its removal to the hospital.

Notes on admission

The child lies on its back, making no attempt to move or to be taken up ; it is quiet for the most part when left undisturbed, but even to stop beside its cot made it cry out, shaking its head and hands as though to prevent further molestation ; the lower limbs, however, always remained motionless.

The body is well nourished, the face puffy and of an

ashen-grey hue, entirely devoid of any trace of colour, heavy grey lines encircling the eyes and angles of the mouth. No proptosis, no subconjunctival hæmorrhage, no strabismus. The lips are dry, cracked and almost devoid of colour, save for a bluish-pink tinge. The two upper central incisors are quite through, loose and embedded in a mass of bluish-brown spongy gum ; on either side of them the lateral incisors are just pushing through the swollen gum. The situation of the other teeth in the upper jaw is shown by a dark purplish-brown streak in the mid-line of gum which would be about the size of the cutting surface of the teeth.

In the lower jaw the two central incisors are through, and the gums appear quite healthy over its entire surface.

The tongue is slightly furred.

The head showed no hæmorrhage ; the posterior fontanelle was quite closed in ; the anterior fontanelle was almost closed.

The shoulders, scapulæ, humeri and elbow joints show nothing abnormal, but the wrists show a very marked and symmetrical swelling of the epiphysial ends of radii and ulnæ.

The chest is rectangular in shape ; the sternum with its articulating cartilages look as though forcibly dislocated from their ribs by a severe blow from a flat board. This appearance is accentuated when the child cries or inspires deeply, the sternum and its cartilages moving little or not at all, while the ribs expand out, till the skin covering their ends appears quite white.

The abdomen presents no unusual appearance ; it is not at all distended, and is rather smaller than might even be expected in a child of its size and age. The liver is enlarged, but any manipulation of abdomen makes the child cry so that it could not well be measured out.

The Spleen could not be felt.

Nothing abnormal was detected in the abdominal walls.

The lower part of abdomen and the inner surface of the thighs suffered from intertrigo due to the napkins.

The lower extremities lie motionless ; any attempt to move them is resented even before the limbs are touched.

The position of limbs seems to depend on the position in which they have been put, save that the left leg lies completely rotated out, and slightly flexed at hip and knee. The left leg

PLATE I.—INFANTILE SCURVY—TO ILLUSTRATE DR ROSE'S PAPER.

has the appearance of being considerably longer than the right, due apparently to an increase in the length of thigh.

The left thigh is much thickened, of a dusky, red colour, suggesting abscess almost in its intensity.

The calf of the left leg is visibly thickened in its upper third, but is normal in colour. There is marked thickening of epiphysial ends at ankle, which thickening passes up the tibia. There is no swelling of foot. The right leg shows marked enlargement of the epiphysial ends at ankle, and of condyles of femur, the thickening here being continued up the leg.

On Palpation, the left thigh is found occupied by an indefinite swelling, firm, almost cartilaginous, enveloping the shaft of the femur, and having a ridge-like edge in its postero-external lower third.

The thickening of the left calf is similar to that of the thigh, and shows a similar ridge on its postero-external aspect.

Joints.—The hip joint is very movable in all directions, perhaps due to a loss of muscular power, there being no attempt to resist movement in any direction.

The knee joint is really lower than it appears to be, but is normal. The ankle joint is normal, save for the bony enlargements at the epiphysial ends.

Nothing abnormal is made out in the right leg, save the epiphysial enlargements and thickening of the tibia already noted.

Measurements—

	Right Leg.	Left Leg.
Around ankle	$4\frac{3}{4}''$	$5''$
Around calf	$6''$	$5\frac{3}{4}''$
1″ above patella	$6\frac{3}{4}''$	$8\frac{1}{2}''$
Thigh	$6\frac{3}{4}''$	$8''$

The condition of the chest, belly, and limbs, is well seen in Photo I.

Ophthalmoscopic examination by Dr Usher showed the eyes to be normal.

Examination of the blood gave the following result :—

Red blood cells.—3,304,000 ; evidently some considerable diminution of hæmoglobin. Practically no poikilocytosis ; but slight variation in size. No nucleated red blood cells.

White blood cells.—10,316; the proportions of the various varieties of leucocytes appear to be normal.

Differential Diagnosis

From *Rickets.*—The open fontanelle, delayed dentition, and pot belly of rickets were absent. The apparent likeness between the two diseases only emphasised the difference. In rickets the chest is flattened laterally; here it was antero-posteriorly. Even the swelling of the epiphysis differed. Instead of a beading it was a thickening which shaded away along the shaft.

Acute Epiphysitis, with pus burrowing below the periosteum and among the muscles, would have given the pain and swelling, but there would not have been the cartilaginous feel of the swelling.

Parrot's Disease, or syphilitic periostitis, presents features in common with the swelling of infantile scurvy, as may be seen from the accompanying photograph of a case which was recently under my care (*v.* Photo No. II.); but other symptoms of congenital syphilis were absent in W. F., and there was no tendency to the formation of abscesses, while the purple and spongy gums made the diagnosis certain.

Subsequent History

The left leg was put on a splint and the child allowed to rest in bed. Fresh milk, barley water, orange juice, and raw meat juice were given. Marked improvement followed, the lividity of the gums disappearing, and the swelling of the limbs becoming less. Unfortunately an attack of diarrhœa supervened, and the patient died very suddenly after being in the hospital for two weeks.

The autopsy was performed by Dr D. M. Duncan, who reports as follows:—

Post-Mortem, 3rd March 1900

Height, 22½ inches; body much emaciated; *post-mortem* lividity, fairly well marked; rigor mortis, slight; pupils, medium, equal; no subcutaneous hæmorrhage.

Heart.—Both visceral and parietal layers of the pericardium

PLATE II.—PARROT'S DISEASE—TO ILLUSTRATE DR ROSE'S PAPER

were rough, and covered with small tags of fibrinous material. There were two small hæmorrhages into the membrane, each about the size of a sixpence.

Lungs.—Both pleural sacs were dry. With the exception of slight congestion at the base, the lungs appeared to be normal.

Liver.—Weighed 15 oz. The liver was considerably enlarged, and projected nearly 3 inches below the costal margin. It was in an advanced stage of fatty degeneration. On section a thin oily film remains on surface of the knife.

Spleen.—Weighed ½ oz. Appears to be normal.

Kidneys.—Right weighed 1½ oz., left 1¾ oz. Healthy.

Stomach and Intestine.—Appeared quite healthy. No hæmorrhages in mucous membrane or in peritoneum.

The left femur was removed and split longitudinally. The lower end of the shaft for about two inches was much thickened. This thickening was due in part to sub-periosteal hæmorrhages, which had lifted up the periosteum from the bone, and in part to a thickening of the periosteum with more or less new bone formation.

The ends of the ribs at their junction with their cartilages were much enlarged, and the sternum and cartilages appeared to have fallen slightly backward towards the spine, producing a very characteristic flattening of the anterior part of the chest.

The anterior fontanelle was almost closed. The posterior fontanelle seemed to be quite closed.

NOTE ON A CASE OF RUPTURED FEMORAL ANEURISM FOR WHICH THE COMMON FEMORAL ARTERY WAS TIED

Read before the Edinburgh Medico-Chirurgical Society

By F. M. CAIRD, F.R.C.S.Ed.,
Assistant Surgeon, Royal Infirmary, Edinburgh

THE following case seems worthy of record on account of its comparative rarity. For the notes of the case I am indebted to Dr Veitch of this city, who called upon me to operate.

The patient was a strongly built and tall working man, whose staple diet was tea and bread. He was engaged in a rubber factory and had enjoyed good health till lately, when he had been troubled with chronic bronchitis. In the spring of 1899, however, he called upon Dr Veitch, complaining of two swellings which had appeared towards the inner aspect of each thigh. The swellings were of the size of a small tomato, and from their distensile pulsations and other characteristics were readily diagnosed as aneurisms of each femoral artery in Hunter's canal. No cause could be ascertained, and the patient stated that he had first noticed them after an attack of cramp.

He was advised to cease work, to rest, and to take Iodide of Potash internally ; and this treatment was pursued till the end of July, during which period the condition remained stationary with the exception of increased pain in the right aneurism. The right aneurism now began to increase so rapidly in size that rupture was feared, but the patient emphatically rejected all attempts to get him into hospital. On August 21st, it appeared that the aneurism had given way, and on the following day this belief was confirmed. Extravasations of blood then extended from the buttock to the knee, pulsation could not be detected in the tibial arteries. The patient's sufferings were now very great, and compelled him, 23rd August, to face surgical relief. He still refused to be taken into hospital, but agreed to operation in the single room which he occupied and which served him for kitchen, parlour, bedroom and hall.

The limb from the knee down was found cold, numb and pulseless. The condition appeared desperate, and it was decided to interfere at once. With lack of assistants, amidst foul surroundings, and in a small room, one was driven to select the most simple procedure, and accordingly the common femoral was exposed and ligatured with a stout piece of old carbolised catgut below Poupart's ligament. The limb was then enveloped in corrosine wool and the patient put back to bed.

The patient now became extremely intractable and restless. A Jubilee nurse did what she could during occasional visits to look after him, but he was out of bed twenty times a night ; he had retention of urine, and hypostatic congestion of the lungs with bronchitis aggravated matters, his temperature running up

PLATE III.—TO ILLUSTRATE MR CAIRD'S PAPER.

to 103°. The dressings became disarranged and soaked with urine and had to be removed on the fifth day, when the wound was found healed by first intention, and in spite of complications, the patient gradually improved and was practically well on the 14th September. For some weeks his sole complaint was pains of the limb.

Towards the middle of November the patient drew attention to pains in the lower part of the hæmatoma. Signs of suppuration were detected, and on November 19th a quantity of slightly purulent fluid blood was evacuated by incision. The original aneurismal sac could be felt above the site of the incised swelling.

The patient is now well. The limb is somewhat weaker than its fellow. The aneurism (March) on the right side is so small that it is barely visible, hard and nonpulsatile, while that of the left side remains very much *in statu quo.*

In regard to the application of the ligature to the common femoral, it was felt at the time of the operation that the life of the limb hung in the balance; and while one saw that, under the circumstances, to ligate the external iliac in the person of a stout man with a somewhat large abdomen would be no easy matter, yet there was sufficient encouragement in the results gained by the Dublin School to warrant the practice that ended so happily.

The photograph taken in February shows the large mass formed by the aneurism and hæmatoma on the right leg, the scar of the incision at the base of Scarpa's triangle, as also the fellow aneurism, which remains stationary, of the right femoral. There is also left inguinal hernia.

NOTES OF TWO ABDOMINAL CASES

By WILLIAM RUSSELL, M.D., F.R.C.P.Ed.,
Assistant Physician to the Royal Infirmary; Lecturer on Pathology,
Royal Colleges School of Medicine, Edinburgh

Displaced Kidney: Pyonephros

MRS J. F., æt. 34, was admitted into the Royal Infirmary on 22nd September 1899. She complained of pain in the right iliac region, of three weeks' duration.

History of present illness.—The history obtained from the patient was as follows:—The illness began three weeks before admission with pain in the abdomen, and she indicated the right iliac region as the site of the pain; the pain was accompanied by retching and vomiting. These symptoms lasted for from three to four days, the vomiting being continuous during those days. The pain was constant day and night and kept her awake at nights. It continued in a mitigated form until a few nights before admission, when she got sudden relief from it, and she fell into a long sleep. She had several shivering attacks which seem to have been rigors; she sweated freely during the three weeks, and says that her hair was seldom dry during that time. The seat of the pain has been tender to touch. There is a bearing-down sensation during micturition, and she states that her urine is thick and high-coloured. She had a similar attack to that just described, five years ago.

She complains also of a pain in the right lumbar region which is always present; the pain does not shoot towards the groin, but upwards to the dorsal region, and the pain is not paroxysmal, but is drawn out and severe. It begins somewhat gradually, and goes off in like fashion. The attacks of pain are generally associated with shivering or rigor. She had not noticed any change in the character of the urine during or after the attacks.

She says she has been subject to attacks of "biliousness," associated with a yellow tinge in her complexion, which has led to comments by her friends.

Family history.—Unimportant.

Personal history.—She is a soldier's wife, and has been married for thirteen years, but she has not had any children. She has not been abroad. Five years ago she had a very severe attack of pain in the right loin which lasted for three days. During the attack there was marked frequency of micturition.

Present condition.—She is a fair-complexioned woman, spare and pale. There is no pain at present. She weighs 7 stone 7 lbs.

Alimentary system.—The appetite is usually good, but the stomach is easily deranged. If she is not careful of her diet, she suffers from pain behind the sternum, flatulence, and a

sensation of weight in the epigastrium. The bowels only move every second or third day.

Abdomen.—The abdomen is of normal configuration ; there is no abnormal bulging or retraction. The abdominal walls are well nourished and move freely. There is markedly greater resistance over the right half of the abdomen, the muscles being contracted and rigid. This side is tender on pressure ; there is no dulness on percussion. On careful palpation and gentle manipulation to allow the muscular spasm to subside, it was ascertained that there was a fulness on the right side which had its lower limit at the level of a horizontal line drawn between the middle line and the anterior superior iliac spine ; from there it extended upwards and apparently backwards, for a communicated impact could be felt with one hand pressed into the corresponding loin. It was not movable. The manipulation of this body caused some pain.

The *liver* edge did not extend below the costal margin. The area of *spleen* dulness was normal. There was no *gastroptosis.* The *circulatory* and *respiratory systems* were normal.

The *temperature* was subnormal, and the *pulse* was beating from 76 to 80 per minute.

Diagnosis. — The swelling referred to was somewhat soft and indefinite, and the question was, what was it? There were three possibilities to be considered ; namely, a tumour connected with the uterine appendages, a swelling due to appendicitis, or a displaced and enlarged kidney. It seemed to me to be last of these, and for the following reasons :—(1) its position ; (2) the level of its lower end ; and (3) most important of all, the fact that by bimanual palpation a communicated impulse was perceptible to the hand in the loin by pressing on the lower part of the swelling in the iliac region. The condition of the urine threw no light on the case at this stage.

Progress.—The temperature was taken every four hours and during the 22nd and 23rd it was subnormal, but on the latter date at 9.30 P.M. the patient was seized suddenly with a rigor and the temperature rose to 103·6° F. She had been free from pain until about 6.30 P.M. of the 23rd, when there was a slight return, and it continued to increase until about 10 P.M. It was not specially severe during the

rigor. The pain was localised in the lumbar region, did not shoot downwards, and was not paroxysmal. The abdominal walls were very tense. The patient was not restless, nor was the face contracted. The pain passed off towards midnight, and the temperature fell and reached 97·4° in the early hours of the morning. The pulse only rose to 90, while the temperature was at its highest.

September 24th.—There was diffuse pain and tenderness in the right side this morning. The urine showed a deposit of one-eighth of an inch of pus in the urine glass; there were no blood corpuscles. Slight pain continued all day but became worse towards the afternoon, and the temperature gradually rose to 103° and the pulse to 109. The abdomen was tense. There was no rigor.

September 25th.—The temperature to-day continued between 101·6° and 103°. The pulse varied from 112 to 120. There was general tenderness. The right side of the abdomen was tense and hard, and there was slight bulging. Palpation was difficult owing to the tense and tender condition of the part, but there was a distinct increase in the size of the tumefaction already referred to, and the impact to the hand in the loin was more marked.

September 26th.—The temperature fell to-day to 99°, but rose to 102° at night. She perspired freely. The general tenderness continued, but there was no acute pain. She was very thirsty. The pulse rate was about 100. The urine contained pus in quantity, with a trace of albumin, but no blood.

The increase in the swelling in the right half of the abdomen, extending into the loin, strengthened the view I had formed that the swelling in the abdomen was a displaced kidney, while the appearance of pus in the urine still further confirmed it. It was now apparent that the displaced kidney was the seat of an acute pyonephrosis.

On the following day the patient was transferred to Professor Annandale with a view to operation. The swelling subsided considerably, but in view of the long history referable to the kidney condition, it was decided to drain the kidney from the loin, and to fix it, if practicable, more in its normal position. The operation was performed by Professor Annandale. The organ was incised, and the large sac formed

by dilated pelvis and calices opened and drained, and the organ was then sutured to the parietes. The patient was much benefited by the operation, and left the infirmary relieved of pain and discomfort.

Retronephric Abscess

John P., æt. 27, brass-moulder, married, was admitted to the Royal Infirmary, Edinburgh, on October 4th, 1899, complaining of pain in the left half of the small of the back and in the left groin. This pain had been present in an aggravated form for the past six weeks.

Personal history.—Became an apprentice to his trade at the age of twelve years, and worked at it until eight months ago. He was exposed to great heat during his work, to metallic fumes, and to great changes of temperature. During the seven years of his apprenticeship he got his meals regularly, and took no food in the workshop. During the eight years in which he was a journeyman he got his meals irregularly, and always took breakfast and dinner in the workshop. He gave up his occupation eight months ago owing to the state of his health. He then worked in a coal-pit until five months ago. He is a sober man.

Medical history.—He was strong and healthy until eight years ago, when he became a journeyman brass-caster. Soon after that he began to vomit every morning, and could not take any breakfast. The vomiting came on when he got up in the morning, and in amount was about half a teacupful. He described it as black in colour and thick in consistence. He soon began to feel less fit for his work. About this time he began to feel pain in the same situation as he now complains of. It used to come on when he was at work ; it caught him like a stitch in the side, and would last for twenty or thirty minutes. It was not so severe as to make him give up work. The pain was very irregular in the times of its occurrence ; sometimes there would be two or three attacks in a week, at other times there would be no attack for several weeks. The pain shot down to the testicle along the groin. There was always a call to micturate after the pain passed off. He did not notice the character of his urine at this time, nor did he consult a doctor. When he first began to suffer from

the pain, a doctor refused to accept him as a member of a Friendly Society owing to the condition of his urine. Although he suffered in this way, he was never off work until 1895; but that year he was a fortnight off work owing to the severity of the pain. He had no medical attendance, however. During the succeeding years he was occasionally off work for two or three days owing to an attack of pain. The pain has gradually been getting worse, and the severe attacks have been more prolonged and more painful. The pain often "doubled" him up. It always began in the left half of the small of the back and shot down the left groin. The paroxysmal pain had become so severe and so frequently repeated that he gave up his occupation eight months ago. He thereafter went to work in the pits, and his general health improved—the vomiting ceased, and the pain occurred at longer intervals and was less severe. This improvement maintained until six weeks ago, when he was suddenly seized when playing quoits. He had to give the game up and go home. The pain was in the usual place but did not shoot downwards to the groin, and it lasted all night. He returned to work the following week, but had again to abandon it, and has not worked for the last five weeks. For a couple of weeks the pain was most severe at night, indeed during the day it does not seem to have troubled him much. He was sick after several of the attacks of pain. For the last three weeks he has been confined to bed, and the attacks of pain have occurred during the day as well as the night, although always more severe at night. The pain has been quite localised, not shooting in any direction, and he compares it to "a hot iron being thrust through the part." He could give no information as to the appearances of his urine.

State on admission.—Patient looks ill and has an anxious expression of face. He is of light build, anæmic-looking, and the muscles are small and flabby.

Pulse 72, regular, fair volume, moderate pressure, vessel walls normal.

Urinary system.—No pain on micturition. Makes urine frequently and in small quantities, but does not usually have to get up during the night to make it. There is pain in the loin as described. He has several paroxysms during

the day and one or two every night, the nocturnal attacks being the more severe. The paroxysm lasts from ten to twenty minutes. After an attack of pain he urinates. There is no sickness. *Urine* dark amber coloured, sp. gr. 1025, acid, deposits urates and phosphates, no albumin, blood or sugar, a few pus corpuscles, no tubercle bacilli found after centrifuging.

Alimentary system.—Appetite poor; no pain; some discomfort and flatulence after food; bowels costive. Tongue coated with a thick fur.

Abdomen.—Inspection—The abdomen as a whole is somewhat protuberant, but moves well with respiration. On turning the patient on to the right side there is a distinct fulness on the left side of the small of the back extending vertically for about six inches. This corresponds with the seat of pain. *Palpation*—The region of the swelling is very tender and painful, so that palpation had to be done cautiously. A swelling could however be distinctly made out, and the impression it gave to me was that of a tense thickish-walled sac. It could not be felt bimanually owing in part perhaps to the rigidity of the muscles anteriorly. There was a notable absence of pain, however, when pressure was made from before backwards, and no suspicion of the swelling could be made out by palpation in front. There is no pain or tenderness in any other part of the abdomen. *Percussion* over the swelling was dull.

Liver, Spleen, and Stomach examination revealed nothing worthy of note.

Circulatory and Respiratory systems were normal.

Integumentary system.—He perspires a good deal at night and during the paroxysms of pain.

Temperature on the day of admission ranged from 99·6° to 101·4° Fahr.

Course of case.—The patient continued to have the pain, although a measure of relief was obtained by local applications. On the 9th October it was noted that he had a very bad night of pain, the pain preventing him sleeping. He sweats profusely when the pain is present and also during sleep. The temperature from the date of admission until the 10th fell daily to subnormal in the forenoon or about noon, but as regularly rose to about 101° between 8 P.M. and midnight.

Diagnosis.—There was little if any room for doubt that there was suppuration in the left loin. It was, however, a matter of interest and of some importance to determine its precise position and its relation to the kidney. As regards its position it seemed to me to be retronephric, for perinephric abscess or any enlargement of the kidney itself can be felt readily by bimanual manipulation, which in this particular instance was not the case. In this case there was marked posterior bulging but no anterior bulging. What added an element of uncertainty to the diagnosis was the long history of pain in the left loin, which seemed to indicate renal colic; and the possibility of a suppurating renal cyst due to calculus suggested itself, but this explanation was not satisfactory. It was, however, clearly necessary to have the pus evacuated, and he was accordingly transferred to Professor Annandale on the 11th October, and operated on immediately. A large quantity of pus was evacuated, the cavity was drained, and the patient made an uninterrupted recovery.

A GLIMPSE OF A MEDICAL MISSIONARY'S EXPERIENCES AMONGST ARAB VILLAGERS AND BEDOUIN EAST OF THE JORDAN

By DAVID WATT TORRANCE, M.B., Tiberias

FELAHEEN and Bedouin from the east of the Jordan had frequently visited the Sea of Galilee Mission Hospital at Tiberias, and I had been often invited to visit them in their homes. The east of the Jordan is considered a dangerous district to travel in, so I used jocularly to say to them on such occasions that my life would not be safe amongst them. They swore by the beard of Mohammed and others that not a hair of my head nor anything belonging to me would be injured, but, on the other hand, that they would honour me as a distinguished visitor; and this I found true, having received real Arab hospitality at their hands, and only on one occasion missing one strap from my saddle.

Tiberias, on the east shore of the Sea of Galilee, lies about 680 feet below sea level, and has in winter an ideal climate;

but in summer, especially when an east wind blows, it is like an oven, the thermometer rising as high as 105°, 110°, and even 117° F. in the shade. At these hot seasons I have frequently taken my tents and gone away to the breezy uplands of the east and visited these primitive Ishmaelites, many of whom still live as in the days of Abraham.

Just outside Tiberias one passes the famous hot sulphurous baths, and about six miles further to the south fords the Jordan as it flows from the lake. In the Hieromax Valley, about two hours' ride to the east, one finds again numerous and copious hot sulphurous springs at temperatures varying from 70° to 130° F., but, unlike those of Tiberias, almost free from salines and drinkable. One beautiful, large, swimming-pond-like pool has the very suggestive name of the "itch" spring. It has a temperature of 100° to 104° F., and all who take a good long bath or swim in this pond are cured of their scabies.

I frequently spend my first night at Gadara (modern, Um Keis, a climb of one hour from the springs), pitching my tents beside the old Græco-Roman amphitheatres and temples at an elevation of 1300 feet above sea level. Until lately most of the inhabitants here lived in the underground rock-cut tombs, sometimes actually sleeping in the sarcophagi. I remember one scorching day—arriving before my tents—seeking shelter in the guest room of the Sheikh. He at once offered me water and coffee. The latter I accepted, but politely refused the former, saying I was only in the habit of drinking *spring* water. "Oh," said he, "heavenly water is much better than earthly water." This *heavenly* water had percolated through the dunghills of the place into the numerous rock-cut cisterns that abound, and was certainly cool (but not colourless); whilst the *earthly* water had to be brought in skins from a beautiful crystal spring in a grotto a mile and a half or so down the valley, and consequently was troublesome to get, and hot when it arrived. No wonder diarrhœa, dysentery, etc., were endemic in the village! My custom and the health lecture which I delivered to him and the chief men who rapidly assembled in the guest room had the effect, I am happy to say, of considerably changing their views and habits, as I found on subsequent visits. As a rule Arabs are very discriminating with regard to water, but I have seen them—and just before prayer time, too

—perform their toilet in a pool and then drink the water, which a donkey could scarcely be persuaded to touch. I try to preach the gospel that cleanliness is next to godliness, and as with them religion consists a good deal in eating and drinking, the sermon goes down ; and, rising from this platform, I frequently proceed to clean living, clean language, clean thoughts, and, still higher (though deeper), to clean hearts and the cleansing blood of our Lord Jesus Christ.

Wherever my tents are pitched, usually in the morning a crowd seeking the Hakeem awakens me from my slumbers. It would be impossible, in anything like a professional way, to deal with each individual, and as many are suffering from similar ailments, I treat them somewhat in classes. Nearly everything is done in public, "*à la* Sequah." For example, one man will come up complaining of tape worm. He has great thirst, stomachache, and nausea, and the segments of the worm wriggle out of the anus on to his garments as he walks about. He has eaten soap and various remedies, but he cannot get rid of it, and wants to know if I can cure him. All who have tape worm (and the proportion is often great) stand around eagerly watching and listening. Questioning the man, I find he is in the habit of eating a favourite dish of crushed wheat and pounded raw meat (sheep or goat—pig is never eaten by Moslems—and the worm is usually T. mediocanellata). Explaining to the wondering crowd that the "living eggs" of the worm are in raw meat, but if they thoroughly cook the meat the "eggs" will be killed. I shortly describe the action of male fern, and send the man, and all like him, to purchase from my dispenser the purgative and male fern capsules which will rid them of the worms ; threatening them, however, if they ever again eat raw meat in any form, they will be liable to a recurrence. Next day I usually have a satisfactory report of the action of the drugs with a request for a supply for friends at home. Of course there is a risk in this wholesale method of treatment, but with a prudent dispensing assistant not much. Intestinal parasites are extremely common. Besides tape worms (which I have also seen vomited upon two occasions), round worms and thread worms are found in great quantities. I have a 20 oz. bottle full of round worms passed by one patient at one time ! Ascarides are most serious, frequently getting up into the upper bowel and

stomach (sometimes, I believe, perforating the bowel), producing syncope, convulsions, and death.

A great variety of diseases are seen. Enteric is common in certain places, as is malaria. The Arabs often do not understand the difference, and expect that the former should be cured as speedily as the latter by a dose of quinine or some other drug. By explaining the natural history of the diseases, one can get the intelligent to understand and have patience to follow directions.

All forms of malaria with its sequelæ are to be found, from the simple intermittents to the pernicious remittents of the Jordan valley and swampy places.

Quinine is now very generally used for malaria by those who have been near towns, but is usually not taken sufficiently long. They are not aware of the cause of malaria. The usual belief is that it is from God—but some have suspected certain drinking water, and certain localities.

They attribute disease to God, to devils, to the evil eye; and as cures they pray, and wear hejabs (extracts from the Koran and devices written by some dervish and kept in a leathern pouch attached by a string to the neck or hair of head or to the wrist). Wandering doctors or holy men attempt to drive out the evil spirits and cure diseases by incantations, poundings (massage!), writing and tattooing on the body, as well as by various decoctions and plasters. Beads, bones, shells (for dropsy!), alum and other salt crystals, the paws of a hyena and other animals, antique coins, etc., are worn as charms, and a good price is often paid for them. Special diets are often ordered; for example, bread without salt, and raisins for forty days. The actual cautery, by red-hot iron or smouldering rag, is a most popular remedy, being applied over the seat of pain in nearly every part of the body but chiefly over joints. The humoral theory of rheumatism, sciatica, etc., is carried out by the application of a pea over the cauterised point to keep the wound open and promote a flow of the evil humour for days, months, or even years. Setons, issues, acupuncture, counter-irritants, scarifying, venesection, and many of the methods of Avicenna are carried out by the Arabs. They delight in purgatives, and often use scammony, which grows in that region. Special men are known as bone-setters. They make a splendid starch bandage

with flour-paste and white of egg spread on calico. They use reeds as splints, but seldom or never fix the approximate joints, or bandage the distal end of a limb, and by tightening the splint too much, frequently produce gangrene. Compound fractures are usually fatal. Bleeding from wounds is stopped by the tourniquet, actual cautery, the application of coffee, ashes, red earth, etc., under a bandage. Wounds I have seen dressed with leaves, rags, skins; and as applications to gun-shot wounds I have seen both tar and treacle used. Tetanus is frequent, also erysipelas.

Inoculation is practised for small-pox, but vaccination is now preferred, and some wandering vaccinators have a living and free pass by vaccinating. Usually they vaccinate from quills charged from vaccine pustules, the site of vaccination marks being usually on the web between thumb and forefinger. Syphilis is common, and mercurial fumigation practised as a cure. Strumous glands, tubercular joints and bones—though not so much pulmonary phthisis—show the wide-spread dissemination of the tubercle bacillus. The common infectious fevers of Britain are to be found, but I have never seen typhus or scarlet fever. There is no yellow fever.

It is well that milk is always scalded before being used as food. I have seen people with small-pox scabs going about their ordinary duties, and even milking goats.

Eye diseases, especially trachoma and its sequelæ, are very common. Many are no doubt due to infection, but are aggravated by the irritation of dust, and smoke from fires. They have a stupid idea, in cases of acute conjunctivitis, that nothing should be done for a certain number of days, under the idea that the disease is not *ripe* till then (like the Scotch notion that an abscess is not *ripe* for opening till it reaches the surface). They do not use lotions or drops much, almost the only fluid eye medicine being human milk; but they are extremely fond of fine powders for the eye, and use black antimony, calomel, oxide of zinc, and other refined powders which they call cohol (from which comes our word alcohol). Travelling oculists go about and sell these powders, and perform with needles the old operation of reclination of the lens for cataract, resulting in temporary sight and the payment of their fee, but, unfortunately, too often followed by retinitis and blindness.

Surgery appeals much more directly to Arabs than medicine. It is something they can see. I seldom stay longer than three, four, or five days at one place, so cannot attempt any serious surgical operations, but the extraction of carious teeth, minor operations for trichiasis, wens, abscesses, small fatty tumours, etc., are of almost daily occurrence, and are done without any anæsthetic or only with cocaine. Occasionally I remove strumous glands, tumours, and necrosed bones, etc., under chloroform, and great is the wonder of the onlookers. Chloroform is taken most kindly by these Easterns, who almost without exception abstain from alcohol. Acute surgical cases I have to treat at once; but all serious cases that can wait, such as cataracts, calculus in bladder, and reducible herniæ, which are common, I recommend to come to hospital.

While at one camping ground friends from a distance will come and invite me to their district. If it is agreeable I ask them to bring camels and shift my tents, which they do, and when I arrive I find a reception awaiting me, a feast ready and a host of patients, all of which I have to "get through," somehow, before I can have any rest. They never think of paying for advice, but they do, a little, for medicines, in coin, or barter in the shape of chickens, eggs, a lamb or goat, butter and honey, or barley for my horses. Usually for noon and evening meal I am invited by some of the chief men. By charging, I am surer that the medicines will be taken and used, and I am respected as a professional man, and not regarded as a traveller with no business but lots of money—one in fact who should be blackmailed. When practicable I give medicines in the form of pills or tabloids, a certain number to be taken as directed. Spoons and cups vary so much in size that no definite dose of a mixture can be prescribed.

In this great district of the Hauran, east of the Jordan, an untold amount of sickness and misery exists, alleviated a little by the medical missions of Damascus, Safed, Tiberias, Salt and Kerak. The cases of vesico-vaginal fistulæ alone from difficult labours (though labours are usually easy) make one long for the day when medical aid will be more within the reach of that fine race.

THE USE OF HYDRO-CHLORATE OF COCAINE IN PRIVATE SURGICAL PRACTICE

By J. EUSTACE WEBB, M.B. Aberdeen, R.N.

IN general private practice the dread of the patient to take a general anæsthetic, and often the difficulty of getting an administrator are felt as distinct disadvantages to operative work being done. I have thought, therefore, that the following remarks might serve a useful purpose if published.

In a variety of cases during the last six years of private practice I have used a 10 per cent. solution of cocaine in operative work not usually undertaken without the assistance of a general anæsthetic. For many years I have never used anything but a subcutaneous injection of cocaine in circumcision; 10 minims of the solution being injected in three or more places in the line of the intended incision. The operation is rendered quite painless. In tonsillotomy at all ages, and removal of naso-pharyngeal adenoids in young adults, I have found painting the surfaces and injection along the nasal floor sufficient to render the operation quite painless. Last year I was induced to use cocaine in the operation of litholopaxy, and in three different sittings under its use the crushed stone removed weighed six drachms. This year in another case, in four sittings I removed under the same anæsthetic crushed stone weighing one and a half ounces. The pain and inconvenience experienced in these cases was infinitesimal, and the patients' sensations were of great assistance in preventing injury to the wall of the bladder and the too forcible compression of the india-rubber bulb in washing out the debris.

Recently I had to operate at midnight on a female of eighty years of age for strangulated inguinal hernia. With only the assistance of the district nurse, by means of the subcutaneous injection of cocaine and its subsequent application by means of pellets of sublimate wool soaked in the solution, the operation was successfully performed. Although the patient only survived the operation a few days she died a peaceful and painless death. In this case I feel sure a general anæsthetic could not have been borne.

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE eighth meeting of the seventy-ninth session was held on Wednesday, 13th June, Mr A. G. Miller, the President, in the Chair.

A case of adiposis dolorosa was shown by Dr James Cameron; the obesity had been much reduced by five grain doses of Thyroid.

Mr Cathcart showed a patient after laparotomy for intestinal obstruction, and emphasised the importance of washing out the bowel above the seat of obstruction. He also showed a patient after excision of gangrenous bowel after strangulated hernia; a specimen consisting of a portion of sigmoid flexure removed for new growth, an intussusception showing itself at the anus having been the first sign of the disease; and a surgical operating case made of polished zinc, with trays and boxes of same material for instruments, sutures, dressings, etc.

Dr Lewis C. Bruce read a paper on "Some observations upon the general blood pressure in sleeplessness and sleep," which appears in this number of *The Scottish Medical and Surgical Journal.* Remarks were made by Dr Clouston, Ronaldson, George Kerr, and Foulis; the latter pointing out that one of the most potent remedies in spasmodic asthma was Paraldehyde, and that in sleeplessness with high blood pressure, and in asthma, it probably acted by relaxing non-striped muscle, in the arterial and bronchial walls respectively.

A paper on "The origin, development and structure of the umbilical cord" was read by Dr James Foulis.

Dr Foulis said that his chief object in reading this paper was to show that the umbilical cord has not a covering or tubular investment of amnion at any period of its existence, as is so frequently stated by authors in their text-books of midwifery. Dr Foulis had examined the embryos of deer and sheep at all stages, and in section; in both these animals the amnion can be traced as a double-layered membrane everywhere in direct continuity with the folds of the somatopleure, both at the two sides and at the cephalic and caudal ends of the embryo.

As the somatopleure folds around the widely-open umbilical foramen consist of somatic mesoblast and epiblast conjoined, so the amnion, morphologically, is an extension of those two layers, somatic mesoblast and epiblast.

In the early deer embryo there was no true umbilical cord,

as the yolk sac communicated with the primitive intestine through the widely-open umbilical foramen; but the vascular connection between the embryo and the chorion and the maternal uterine mucous membrane was carried on by means of the abdominal stalk, the ventral string, or the "Bauchstiel" of His, which to the eye appeared to be a continuation of the tail end of the embryo towards the chorion. In the "Bauchstiel," as seen in sections, the allantois with the two allantoic arteries and veins are to be found.

Dr Foulis showed that the greater part of the "Bauchstiel" is derived from the two lateral folds of somatopleure by simple extension. The allantois, or sausage-shaped diverticulum from the cloacal end of the primitive intestine, accompanied by the two allantoic arteries, grows upwards and outwards in the caudal cleft between the two lateral somatopleure folds which close in upon it, enveloping it in a mass of thick mesoblastic tissue; and it then passes out in the midst of its vascular mesoblastic tissue towards the chorion, as the ventral string, or "Bauchstiel," to supply the chorionic villi with blood-vessels. In the deer embryo the allantois soon expands out laterally or transversely, between the true and false amnion into a large bladder-like vesicle.

The allantois is lined by hypoblastic cells which are continuous with the hypoblastic cells lining the primitive intestinal tube, and it has a covering of thick mesoblast which gradually thins off, and in which ramify the branches of the allantoic arteries which come from the primitive aortæ, on their way to supply the chorionic villi with blood-vessels. The return circulation from these villi is carried on by means of the two large allantoic veins, which are to be found in the substance of the mesoblast of the two lateral somatopleure folds.

It is important to note, in support of the view that the lateral somatopleure folds take part in the formation of the ventral string or "Bauchstiel," that transverse sections beginning at the tail end of the embryo and carried on through the "Bauchstiel," always show in the substance of these folds the large allantoic or umbilical veins; and, further, these veins can be traced in the substance of the "Bauchstiel," on either side of the allantoic out-growth, as far as the "Bauchstiel" extends on its way out to reach the chorion; and these veins can be shown to be continuous with the two veins in the substance of the two lateral somatopleures, on either side of the embryo, as they pass up towards the heart. Sections of the embryo through its middle part show that these umbilical veins lie in the substance of the somatopleure folds, just at the part where the folds turn outwards to give off, and become continuous with the amnion

as it passes over the dorsum of the embryo. The allantoic or umbilical veins can thus be shown to pass upwards from the chorionic villi towards the heart, in the lateral parts of the "Bauchstiel," which are, morphologically, continuous with the two somatopleure folds at the sides of the embryo.

In all parts of the somatopleure folds these veins can be seen in the mesoblastic tissue, just at the point where the folds turn outwards, to be continuous with the amnion as it passes round over the dorsal surface of the embryo; and these veins continue onwards in the "Bauchstiel" in exactly the same morphological relation towards the chorion, from which they convey the blood back to the heart, as already described. The lateral folds in the "Bauchstiel" give off the amnion in exactly the same way as the lateral somatopleure folds round the umbilical foramen give it off.

The central part of the "Bauchstiel" is occupied by the allantoic hypoblastic tube and the allantoic arteries, which come off as direct prolongations of the primitive aortæ. And in the lateral parts of the "Bauchstiel," which are morphologically the extended lateral somatopleure folds, are the allantoic or umbilical veins; and it is interesting to observe that these two veins can be seen, one on either side of the umbilical cord, at its very earliest appearance at a later stage of development.

The "Bauchstiel" is the analogue of the true umbilical cord, and it is converted into the cord in the following way.

From the two sides of the "Bauchstiel" the amnion membrane, as an extension of the somatopleure folds, grows round the dorsum of the embryo, and appears to embrace it closely at its caudal end. At this stage of development there is no trace of a tail in such an embryo, and its caudal end is blunt or round. The amnion, as it sweeps round under the "Bauchstiel," appears to be attached to the under surface of the "Bauchstiel" at its root; and it is quite evident from a study of sections of the embryo in this region that the somatic mesoblast of the two lateral somatopleure folds in the "Bauchstiel" is here greatly everted, probably by the great growth of the allantois centrally. The amnion comes off from the under surface of the "Bauchstiel" at its root, but it is continuous everywhere with the amnion which comes off from the sides of the "Bauchstiel"; and it is important to note that the amnion, as it comes off from the sides of the "Bauchstiel," is directly continuous with the amnion coming off from the lateral somatopleure folds which bound the umbilical foramen. It is only by understanding this connection between the amnion coming off from the sides of the "Bauchstiel," and the amnion

coming off from the somatopleure folds round the umbilical foramen, that it is possible to follow clearly the steps in the conversion of the "Bauchstiel" into the true umbilical cord.

The first step in the conversion of the "Bauchstiel" into the umbilical cord is the distension everywhere of the amnion sac by fluid, by which means the amnion sac is gradually raised off the surface of the embryo at all parts, and its attachments to the embryo are put on the stretch. As the amnion everywhere comes off from the somatopleure folds, these folds are put on the stretch. The distension proceeds, and soon the head and tail ends of the embryo approach each other over the umbilical foramen; and it is seen that the "Bauchstiel," which at first was almost in a horizontal position as a simple extension of the caudal end of the embryo, has now assumed an almost vertical position. The amnion can now be seen coming off from the two sides of the "Bauchstiel," in the centre of which is the allantoic tube with the allantoic blood-vessels, and the amnion is seen everywhere continuous with the amnion coming off from the lateral somatopleure folds round the shrinking yolk sac. The somatic mesoblast of the somatopleure folds around the yolk sac is now gradually closing in, and its surfaces everywhere round the yolk sac are approaching, and the umbilical foramen is becoming smaller and smaller. The thick mesoblast of the "Bauchstiel" contains in its substance the tube of the allantois with the two allantoic arteries and veins, and these are all included in the true umbilical cord at a later stage of development. As yet there is no umbilical cord; but it is now about to be formed by the approach and adhesion round the umbilical duct, of the mesoblastic surfaces of the somatopleure folds all round the umbilical foramen. The caudal mesoblast, or the "Bauchstiel" mesoblast, with the allantoic tube, arteries and veins in its substance, approaches the somatic mesoblast of the cephalic somatopleure fold, and the mesoblast of the lateral somatopleure folds, in such a way that a tube of somatic mesoblast is thus formed around the collapsed yolk sac; and as soon as the tube thus formed grasps the yolk sac, the body cavity of the embryo, or the cœlon, is shut off from the sac of the false amnion with which up to now it has been in free communication. A complete tube of the general somatopleure is thus formed round the yolk sac, and the amnion is directly continuous with this tube at its distal end. The epiblast on the outside, or surface of this tube, is continuous with the epiblast on the body of the embryo, and is also continuous with the epiblast lining the sac of the amnion.

This tube of somatic mesoblast in contact with the yolk sac, with its epiblastic covering, is thus a tube of the general

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somatopleure fold, and it is the earliest trace of the true umbilical cord—and as the amnion everywhere is, morphologically, an extension of the somatopleure, so it is found to be in direct continuation with the distal end of the umbilical cord thus formed. It is only in this way we can explain how it is that the amnion membrane at a later stage may be so easily stripped off the mesoblastic surface of the chorion and from the fœtal surface of the placenta, but that it cannot be stripped off from the umbilical cord itself.

As the amnion sac becomes further distended during development, its mesoblastic or outer surface, which is continuous with the inner surface or mesoblastic lining of the tube round the yolk sac, becomes opposed to the inner or mesoblastic surface of the chorion, and it also covers the fœtal surface of the placenta. It can be easily stripped off, both from the chorion and from the fœtal surface of the placenta at birth; but it is impossible to strip the amnion from the umbilical cord, because the amnion as a double-layered membrane non-conjoined, is, morphologically, continuous with the somatic mesoblast and epiblast of which the umbilical cord, as a tube of somatopleure, now consists. Thus the umbilical cord never has a covering of the amnion.

After the umbilical cord is thus formed, and the cœlom or body cavity of the embryo is shut off from the false amnion sac by the complete closure of the somatopleure tube round the yolk sac, the umbilical cord, as a closed tube, is found to be within the amnion sac, and to be continuous at its distal end with the amnion membrane. The blood-vessels of the umbilical cord within the closed amnion sac can be seen in the now much shrunken "Bauchstiel" as they continue outwards in their course towards the chorion and placenta.

The following were elected Honorary Members of the Society:—Sir Thomas Lauder Brunton, London; Professor Osler, Baltimore; Professor Snellen, Utrecht.

Edinburgh Obstetrical Society

THE seventh ordinary meeting of this Society was held on the 13th June. Dr R. Milne Murray, President, in the Chair.

Amongst a large number of interesting specimens shown perhaps the most remarkable were a gravid uterus (fifth month) removed by pan-hysterectomy for cancer of the cervix, by Dr Brewis; a ruptured extra-uterine gestation, in which post-decidual hæmorrhage had occurred, by Dr Haultain; and a

dermoid ovarian tumour, removed by Dr Haig Fergusson from a patient in her fourth month of pregnancy.

Dr D. Berry Hart read a paper "On the Nomenclature of Transverse Presentations and of Versions, with Remarks on the Choice of the Leg Seized." The best nomenclature was to name the positions from the acromion, as it was the presenting part most frequently. The names given to the varieties of version were very confusing; the terms applied being either descriptive of the method by which turning was performed or its object. There were three clearly defined varieties of version: (1) Combined external—cephalic; (2) Simpson's combined version—podalic; (3) Braxton Hick's bipolar version—podalic. As to the choice of the leg to be seized, Simpson advocated the seizure of the further knee; that is, of the knee opposite to the presenting shoulder; while Galabin advised the seizure of the near foot as a rule. In conclusion, Dr Hart stated that for dorso-posterior cases Simpson's advice was the best, while for dorso-anterior cases Galabin's plan was the correct one.

The communication was discussed by the President, Professor A. R. Simpson, and Drs Barbour and M'Vie.

Dr A. H. Freeland Barbour gave a communication "On the Set of the Pelvis in the Body (inclination of the Brim apart from Position) and its Obstetrical Significance." A drawing of the pelvis of a woman who had never walked was shown, and in it the brim was seen to be almost vertical with the promontory very high. From a study of frozen sections from cases of pregnancy and labour, Dr Barbour found that the direction of the brim was not definite, but varied greatly in obstetrically normal pelves. The significance of the set of the brim lay in the influence which it exerted on the engagement of the head and on the driving power of the uterus. The following conclusions were arrived at:—(1) The inclination of the brim, instead of being described in reference to the horizontal plane, may be described in relation to a perpendicular let fall from the upper margin of the symphysis on a line passing through the promontory in the direction of the long axis of the abdomen. (2) The angle of divergence of the plane of the brim from this perpendicular is necessarily the same as the angle of divergence of the axis of the brim from the long axis of the abdomen. (3) The range of divergence in obstetrically normal pelves is considerable, varying from 40° to 60°. (4) This variability must exert a distinct influence on the engagement of the head and the driving power of the uterus in multiparæ. It would be better if in text-books, instead of showing the pelvis only in the upright position, and referring its inclination to the horizontal plane outside the body, there should be a diagram

including the lumbar portion of the spine, representing it in the dorsal posture, and referring the inclination of the brim to a perpendicular let fall in the long axis of the abdomen, which was practically a horizontal plane passing through the pelvis. The inclination of the brim should be marked not only by a line representing the mean but also by a maximum and minimum inclination for normal pelves.

Dr Barbour grouped the literature relating to this subject into two periods, and concluded by stating that if he were to put briefly the outcome of these observations and his object in bringing them forward, it was that the observation of Meyer, by drawing attention to the varieties in inclination due to posture, diverted attention from those due to the set of the pelvis in the body, which a study of frozen sections had demonstrated.

New Books and New Editions

Ulcer of the Stomach and Duodenum and its consequences. By Samuel Fenwick, M.D., F.R.C.P., Consulting Physician to the London Hospital; and W. Soltau Fenwick, M.D. Lond., M.R.C.P., Senior Physician to the London Temperance Hospital, Physician to the Evelina Hospital for Sick Children. pp. 392, with numerous illustrations. London: J. & A. Churchill. 1900. Price 10s. 6d.

We took up this book with a feeling of curiosity as well as of interest; of interest because of the practical importance of the subject with which it deals, and because of the doubts as to the pathogenesis of the lesions treated of; of curiosity to ascertain how some 400 pages could be profitably occupied by the consideration of the subject which gives the title to the volume.

After a short historical introduction, the book is divided into four parts; the first dealing with pathology and etiology, the second with acute ulcer of the stomach and duodenum, the third with chronic ulceration of those parts, and the fourth with the sequelæ of chronic ulcer. The first part is based upon the post-mortem records of 1015 cases of ulcer of the stomach and of 130 cases of ulcer of the duodenum, and contains an exhaustive analysis of this very large collection of cases. An important separation is maintained throughout the volume between acute and chronic ulceration. The number, size, situation, and general appearance, including shape and edges, are all dealt with statistically, and the question of shape has been investigated experimentally and given a satisfactory

explanation based thereon. The next chapter deals with the results of ulceration, and some interesting points are made out regarding the scars of healed ulcers. Another point of great clinical moment is the recognition by the authors that ulcer may be so placed as to cause spasmodic contraction of either the cardiac or pyloric orifice; this is a point regarding which we have long been satisfied, and we entirely agree with the contention of the authors. One of the interesting sections of this chapter treats of perforation, and contains information which every physician and surgeon would do well to be acquainted with.

The third and fourth chapters treat of the etiology and pathogenesis of gastric and duodenal ulcer. The relations between ulcer and hypersecretion are discussed and given, we think, their due place. The authors are not forward advocates of the use of the stomach tube for diagnosis, and they truly say that as a means of diagnosis it has never obtained any degree of popularity in this country. The pathogenesis is discussed with marked ability, and to the elucidation of this vexed question the authors contribute original experimental observations of value.

In part three symptomatology and the clinical varieties of chronic ulcer are discussed at great length and with an elaboration which conveyed to the reviewer a certain sense of indefiniteness, but the chapter on diagnosis is more precise.

The chapters devoted to the treatment of the acute and the chronic ulcer bear the stamp of wide experience and successful management.

The concluding part of the volume is devoted to the sequelæ of chronic ulcer.

In the limited space of a review, it is almost impossible to do justice to a monograph of this kind. Its pages indicate an amount of careful and prolonged clinical and pathological investigation and observation which easily give the book a first place amongst medical monographs, and we very heartily commend it to the more thoughtful and reading members of the profession. We equally heartily congratulate the authors on the high quality of their work.

Appendicitis. Medical Monograph Series, No. 3. By A. H. Tubby, M.S. Lond., F.R.C.S., Surgeon to Westminster Hospital, Senior Surgeon to the Evelina Hospital for Children. Crown 8vo, 100 pp. London: Baillière, Tindall & Cox. Price 2s. 6d. net.

This little book presents an admirable account of appendicitis. The author has, as he acknowledges, drawn fully upon the writings of others on the subject, but the gathering together

of much information in this concise form adds value to the monograph. The author adopts, with modifications, Hawkins' classification, which is as useful and practical as any yet suggested. It may be safely stated that the crucial question in cases of appendicitis is prognosis; and on this point there is little added to our knowledge. Mr Tubby acknowledges the difficulty, and thinks it is to be overcome by placing all cases in the hands of the surgeon at once. It is fairly accurate to say that some 80 per cent. of cases are successfully treated by the physician, but because the remaining 20 per cent. may require operation they are all to be handed over to the surgeon. A large and not an over-modest demand! And the surgeon is the only judge of whether operation is or is not imperative! If surgeons always showed a reliable prescience this might be conceded, but that has not been the experience of physicians. If the physician is inclined to procrastinate we have found the surgeon equally ready to do so. In fact in the cases of doubt both physician and surgeon doubt, and doubt usually means procrastination to the surgeon, with the result that some patients recover without operation, and others do not recover, and would not have recovered if they had been operated on earlier. The estimation of the prognosis is, we believe, still safer in the hands of the physician than of the surgeon. If surgeons in this country adopted the position taken by American and other surgeons that the diagnosis of appendicitis required to be followed by prompt operation, Mr Tubby's claim would be, at least, logical. Neither he nor they, however, have adopted this as a definite rule of procedure. Whether they ought to do so is considered by Mr Tubby and set aside. Mr Tubby says that appendicitis is not a disease to be dominated by available statistics, and wants medical statistics on the after-history of cases. We have long felt that it is to be regretted there are not abundance of such available; but we believe that it is because practitioners see so many cases which recover under medical treatment, and which never have a second attack, that they are not favourable to early or routine operation. It is not the hospital physician who could supply the most useful figures on this point. This aspect of the question is so important that no apology is needed for dwelling upon it. While we totally disagree with the author of the monograph as to the means of solving difficulties, it must not be understood that this in any way detracts from his admirable presentation of the subject. In fact all practitioners will find this little volume well worth possessing and perusing; and the author can justly be congratulated on the clear, concise and judicious manner in which he has handled his subject.

Diseases of Children. A Manual for Students and Practitioners. By GEORGE M. TUTTLE, M.D., Attending Physician to St Luke's Hospital; Martha Parson's Hospital for Children; and Bethesda Foundling Hospital, St Louis. 8vo, pp. 1-6, 17-386, with five plates in colours and monochrome. London: Kimpton. 1900. Price 7s. 6d. net.

THIS Manual forms one of the series of modern text-books edited by Dr Gallaudet. It does not seem to us that the author has entirely succeeded in fulfilling the aims set forth in his preface — of "dealing more largely with the physiology of infancy and with artificial feeding than with the pathological states found in childhood," or, again, of only briefly describing such diseases as in no wise differ from the same conditions as seen in the adult.

The first three chapters are devoted to the infant at birth, the development of the child, and the examination of the child. So far as they go these are satisfactory, but the space allotted (fourteen pages, of which the important subject of the examination occupies only one) is wholly inadequate, especially in a book designed for the use of beginners. The chapter on infant feeding is perhaps the best in the book; it is clear and practical, and will be found sufficient for all ordinary purposes.

The greater part of the book is devoted to a systematic description of the various diseases. This would be greatly improved by the omission of a number of diseases which present no peculiarities in childhood, and by a much fuller description of some of the commoner maladies. To take examples at random:—Two pages are devoted to biliary calculi and the symptoms they produce; the description is identical with what may be found in any ordinary text-book of medicine, while there is no reference to the recent interesting observations on the occurrence of gall-stones in quite young infants. A little further on we find that acute septic peritonitis and simple chronic peritonitis fill up five pages, while the much more important tubercular form is scantily dealt with in three. In a work on diseases of children we expect to find mention of œdema neonatorum, facial irritability, head nodding, nystagmus, and congenital laryngeal stridor—to name some only of the omissions, while we could well dispense with notices of Addison's disease, ranula, gastric ulcer, piles, suppurative hepatitis, and many others.

The descriptions of diseases and their treatment are, as is inevitable from the plan adopted, somewhat short and scrappy, but they are clear and sufficiently accurate. The plates are on the whole satisfactory.

Practical Manual of the Diseases of Women and Uterine Therapeutics. By H. MACNAUGHTON-JONES, M.D., M.Ch., President of the British Gynæcological Society, etc. Eighth edition, revised and enlarged. Demy 8vo, pp. 947, with 640 illustrations and 28 plates. London: Baillière, Tindall and Cox. 1900. Price 18s.

MACNAUGHTON-JONES' Manual of the Diseases of Women has since its first appearance several years ago deservedly won its way to a position among the very best text-books on Gynecology in the English language. The eighth edition again marks a very substantial advance upon the seventh as did the seventh upon the sixth. The author has incorporated in his volume much of the best of the recent work of Doyen in Paris and of Howard Kelly in Baltimore; for instance hysterectomy by angiotripsy is fully described and sufficiently illustrated, and the exploration and management of affections of the bladder and ureters are exhaustively treated. Atmo- or zestocausis, one of the newer developments of gynecological technique, is also described but with no great detail, and we fancy the author has no personal experience of it. The use of levurine in pelvic suppurative conditions is not, so far as we have observed, referred to; neither is that of eumenol for dysmenorrhœa. The Manual is intended, as its title-page tells, for the use of students and practitioners; but its contents may be perused with profit by specialists in gynecology also, in fact the student and practitioner may leave out in his first reading at any rate much of the small print. The illustrations are many and good. Some of the etiological and differential diagnosis lists are rather overweighted; and on page 832 there is a prescription for cystitis which contains eight separate drugs, which is reported to be "an admirable mixture." The great part of the work, however, is above the reach of the critic, and a ninth edition may ere long be looked for.

Gynæcological Nursing. By G. A. HAWKINS-AMBLER, F.R.C.S., Assistant Surgeon Stanley Hospital, Liverpool, etc. Pp. 96. London: The Scientific Press, Ltd. 1900. Price 1s.

THIS little book, which is No. 11 of the Burdett series of popular text-books on Nursing, is addressed to nurses who have had a general training and who require a more special knowledge of gynecological nursing. We agree with the author that the nurse of a gynecological case, especially if that be of the nature of an abdominal section, ought to be "seasoned and balanced," but we are not prepared to admit as a reason for this that many of the

patients with whom she is brought in contact have a moral disposition which is light, and "too little respect for the ethics and responsibilities of sex." The chapters on personal hygiene and douching and the amenities of the sick-room are reliable. In the chapter on sponges and dabs, the author states that he never uses a sponge twice, and that he prepares them himself, holding that the surgeon who "permits a nurse to prepare his sponges is either dangerously confiding in nature, or has immense confidence in her capacity."

Operations. Vade Mecum für den Praktischen Arzt. Von Dr EDMUND LESER, Professor an der Universität Halle A.S. Mit 144 abbildungen. Berlin, 1900. Verlag von S. Karger.

THIS, as the title indicates, is a short account of some of the more important operations in surgery. The illustrations are mostly borrowed from Kocher's book on "Operative Surgery," and the process of reproduction has not improved them.

The book will no doubt serve a useful purpose for those for whom it was intended, but it has no outstanding merits to recommend it to a wider circle in English-speaking countries.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

By J. MACKIE WHYTE, M.D.,
Physician to Dundee Royal Infirmary

The Treatment of Pulmonary Phthisis.—This is a subject of which it is well for us to take a general view from time to time, more especially when new modes of treatment are under trial. Further, with a disease which is so common, and in many ways so relentless, our activity on the patient's behalf is apt to run on monotonous lines. We are apt to treat the disease instead of the patient. The sanatorium treatment, which in many ways appears to be the best, can, for various reasons, be taken advantage of only by the few.

In these circumstances, the general practitioner will welcome an abstract of a valuable paper by Prof. C. Gerhardt (*Die Therapie der Gegenwart*, May 1900).

Early diagnosis and complete examination of the patient are

more necessary than ever; every case has some special point; all have a tendency to illusions, to hopefulness, and to restlessness. The first must be combated, the second encouraged, while the third can be utilised.

We all know how patients in the early stage endeavour to explain away their symptoms. Hæmoptysis is often a most valuable ally to the physician in opening the patient's eyes to the seriousness of the case.

Hopefulness is turned to account in inducing the patient to use every effort in fighting the disease, the danger of which he has been made to appreciate. Restlessness can be utilised in removing a patient to more favourable environment, either in the same or in another climate. Fresh air and plenty of it is one of the first requisites, and it can be got on the high seas, amongst the mountains, in the steppes, on the edge of the desert. A poor cottage in the lonely Highlands is often better for the working man than the best hospital in the great city.

Patients who are pasty-faced, well-nourished and free from fever are better amongst the mountains, provided there is no serious affection of the larynx; while those who are thin, who fever easily, and who have an excitable heart, do better the further south they are.

Patients must be as long as possible in the open air; at first in their room in bed at the open window; then an hour outside, gradually increasing. They must gather strength and not spend it; they must lie, and not go about.

The next most important point is abundance of nourishment, and this should contain as much fat and fatty foods as the appetite can stand. Milk in abundance, cod liver oil, all sorts of ordinary food, whatever the patients can best take must be pressed upon them.

The products of the chemical laboratory, *e.g.* peptone, tropon, etc., are referred to somewhat slightingly.

A third most important point is the hardening of the patient; at first perhaps by dry-rubbing; then rubbing with spirits, brandy and water, tepid water, cold water; finally by the application of cold douches or shower-baths.

Such treatment not only protects from cold, but has a most valuable stimulating effect on the nervous system.

Drugs have their uses, though anything of the nature of a specific is not to be found. Feverishness can be tackled only indirectly with much advantage; occasionally a febrifuge, such as phenacetin, antipyrin, or quinine may be given with a view to procuring a night's rest.

A dose of alcohol may check the rigor which frequently ushers in the rise of temperature. Gerhardt is inclined to

believe that some benefit may be derived by consumptive patients from small quantities of alcohol. He considers phthisical sweats the final act in the febrile cycle, just as in ague, and gives antihidrotics very sparingly. Their effect is usually very brief, and they are apt to upset the stomach. For loss of appetite there is nothing better than living in the open air.

Creosote, or one of its derivatives, is warmly recommended for improving the appetite and diminishing the secretion in the air passages. No one now believes that it acts directly on the tubercle bacilli in the body.

Coughing, when it is of a dry, obstinate character, may be due to an ulcer in the throat. Local applications to heal, or at least to anæsthetise, the ulcer are indicated. Or a dry pleurisy may be the cause. Or the quantity of expectoration may require limitation by creosote, tolu balsam, terpine hydrate, or similar means. Gerhardt avoids the old expectorants, as likely to destroy the appetite. Again, many patients must be educated to suppress their cough; in small matters like this the constant presence of a physician is most useful. As for **sleeplessness**, it is easier to say what should not be done than what should. One does not wish by morphine to procure sleep, at the expense of retaining putrefactive germs in pulmonary cavities; one tries rather what can be done by remaining long in the open air, by suitable nourishment, especially light suppers, by sleeping with open windows, quiet surroundings, etc. Heroin in doses of gr. $\frac{1}{12}$, or dionin, may be tried, or various inhalations, or balsams internally, or bromides, the effect being partly or chiefly mental.

For **hæmoptysis** are recommended rest, cold food, and the ice-bag. A teaspoonful of salt in a glass of water is perhaps nauseating, but useful. Morphine in special cases; ergot, though its mode of action is obscure; application of a ligature to the limbs, so as to compress the veins, but not the arteries; atropine: these all have apparently beneficial action.

Tuberculosis of the Larynx, in its various forms, demands early treatment. Superficial ulcers should be touched with 30 to 60 per cent. solution of lactic acid, for example. Avoiding of coughing and speaking is necessary.

Constipation should be dealt with in the gentlest way. For **diarrhœa** from intestinal ulceration, proper diet may do much —milk, mucilaginous soups, Iceland moss, rice, soft-boiled eggs, cocoa, etc. Amongst drugs are mentioned bismuth, zinc, tannic acid, tannigen, tannalbin. In England extractum belæ is praised.

Increase of weight does not necessarily indicate that healing has set in, though it is, of course, a favourable sign.

Gerhardt's paper, which deserves to be read in its entirety,

closes with an eloquent statement of the greater responsibilities now laid upon the physician in the treatment of phthisis.

A Contribution to the Pathology of Bronchial Asthma (A. Fraenkel, *D. Med. Woch.*, April 26, 1900).—The author gives a review of the somewhat scanty histological observations on this subject. In addition to a spasm of the bronchial muscles, the presence of a desquamative catarrh is generally admitted. The actual pathological condition present in the bronchioles varies, there being at least two main forms of secretion: 1st, a tough, clear mass, with abundance of small coagula and spiral threads; 2nd, an abundant thin expectoration consisting of mucus and froth, seldom with crystals and spirals.

Fraenkel describes a post-mortem on a man, 48 years old, who suffered from chronic asthma, the attacks latterly being almost daily. His tough, glassy sputum contained numerous coagula, with Curschmann's spirals, and "asthma crystals." He died from increasing cardiac weakness thirty-six hours after the last attack. The small bronchi contained spiral coagula, mucous, not fibrinous; they contained also eosinophile cells. Various microscopic sections appeared to show that the spirals are formed in this way: first an exudation of mucus occurs from the superficial cylindrical cells; this being moved backwards and forwards by the air current, and still adhering to the cells, causes their peripheral ends to be drawn out into long threads; these become intertwined, and along with the mucus, form the spirals. As to further changes in the smaller bronchi, there was hyperæmia of the vessels of the mucous membrane, small hæmorrhagic exudations around them, and leucocytes, mainly eosinophile, in the wall or lumen; also numerous Charcot-Leyden crystals. The absence of spirals in the early stage of bronchitis is due—(1) to the fact that the mucus is not so viscous as in asthma, this perhaps being associated with a vaso-motor influence; and (2) to the fact that there is no muscular spasm, which, by narrowing the lumen, causes the air-current to have a greater effect on the epithelium and attached mucus.

The treatment of acute asthmatic attacks by *atropine* as advocated by Riegel (*D. Med. Woch.* No. 41, 1899). Stimulation of the vagus has been shown to produce a marked increase of respiratory pressure and distension of the lungs, associated with spastic contraction of the bronchial muscles. Various sedatives and narcotics are more or less successfully employed in combating asthmatic attacks. For some years Riegel has used atropine for this purpose with encouraging success. To obtain a quicker result he gives it hypodermically, the dose being from $\frac{1}{2}$ to 1 mg.

(gr. $\frac{1}{120}$-$\frac{1}{60}$). In fifteen to twenty minutes, or at most in half an hour, the dyspnœa was gone, and along with this relief could be noted a recession of the outline of the lungs to the normal. One feels all the more encouraged to give this measure a trial as Riegel does not put it forward as a panacea. On the contrary, he says there are cases where it has no effect, failure being attributed to severity or long duration of the attack, or to the fact that the conception of asthma is neither simple nor uniform. Trousseau was accustomed to treat the asthmatic habit by courses of belladonna or atropine, alternating with courses of turpentine and arsenic (ten days of each). Von Noorden recently directed attention to the prolonged atropine treatment, but Riegel does not feel able as yet to express a decided opinion, except as regards the meeting of the acute attack.

SURGERY

ON INFILTRATION ANÆSTHESIA

By JAMES HODSDON, F.R.C.S.Ed.,
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THE safe abolition of pain without the aid of a general anæsthetic during a surgical operation is in many instances greatly to be desired. The anæsthetic agent must, however, be devoid of risk, both as regards its toxic effects and wound infection. It is also important that the area of operation should be interfered with as little as possible.

When Koller of Vienna brought cocaine prominently under the notice of surgeons in 1884, great expectations were entertained as to its use.

It was speedily found, however, that in order to be effectual in general surgery, the drug had to be employed hypodermically, and that the strong solutions at first considered necessary were unsatisfactory on account of their danger and because their action was too local. Cocaine accordingly fell into comparative disuse in the hands of the general surgeon.

During the last ten years or so various modifications in the use of cocaine, and its allied salts, have been introduced by Continental and American surgeons, which have enabled operators to successfully employ local anæsthesia in some of the greatest operations in surgery.

The method now employed is spoken of as infiltration anæsthesia, or more correctly, infiltration analgesia.

The production of local analgesia is founded upon the fact that when cocaine and its salts are applied to the trunk of a

sensory nerve the function of the nerve is suspended, and the sense of pain in its terminal branches abolished.

Corning, an American surgeon, quoted by Cushing, made use of the principle of cocainisation of the main nerve trunks in 1885, and this method of producing analgesia has been employed in operations upon the extremities, for minor and even major amputations, and for rendering areas of skin analgesic preliminary to the removal of skin grafts.

In the use of infiltration anæsthesia, the object is by multiple injections in the course of sensory nerves to render impossible the escape of any nerve twig from the influence of cocaine, and thus cause the field of operation to be analgesic. An accurate knowledge of the distribution of the nerves to the area of operation is therefore of the greatest value. When infiltration anæsthesia first came into use sufficient attention was not paid to this detail, the importance of which will be readily appreciated by reference to Cushing's paper on Hernia.

One of the earliest modifications was that of Reclus, which consisted in injecting a 1 per cent. solution of cocaine into the soft parts, layer by layer. This method has, however, been found to be sometimes followed by toxic symptoms in susceptible persons, and ought, therefore, to be limited to operations confined to a small area.

J. Custer has pointed out that the toxic power of cocaine, when injected hypodermically, depends less on the quantity injected than on the strength of the solution, and that the same quantity of cocaine in a 0·2 per cent. solution is five times less toxic than a 5 per cent. solution.

To Schleich is due the credit of having carried out the principle introduced by Reclus of injecting a weak solution of cocaine into the tissues layer by layer, and it is with his name that the method of infiltration anæsthesia is usually associated. Schleich reduced the concentration of the cocaine and employed greater quantities for injection. He was thus able to extend the method to operations of greater magnitude than had been hitherto possible.

Schleich employs solutions of three strengths. The medium one consists of—

Cocaine hydrochlo., . .	0·1
Morphin, . . .	0·02
Sodii chlorid, ...	0·2
Aq. distill. ad., . . .	100·0

The stronger solution contains 0·2 per cent. of cocaine, and the weaker 0·001 per cent. of the drug.

Schleich claims solutions of the strength of 1-20,000 to be effective and to produce anæsthesia which is free from the

prodromal hyperæsthesia prone to accompany the injection of water and saline solutions alone.

Braun and Hentze carried out interesting experiments upon the effect of various solutions when injected into the tissues. As a result of these experiments Braun has modified the solution employed. It was found that simple distilled water, when injected into the tissues, produces two effects—pain, more or less severe, and then transient anæsthesia. These effects are due to osmotic tension. All fluids which have nearly the same freezing point as the normal fluids of the body produce no osmotic tension. Stronger solutions withdraw water from the tissues and cause pain; weaker solutions cause the tissues to swell and are similar in their effects, the nearer they approach pure water the greater the pain. An indifferent fluid isosmotic with the blood produces neither pain nor anæsthesia.

A warm and osmotically and chemically indifferent fluid with a freezing point of about 0·55 C. is a medium which, when injected, produces no physical effects *per se*, and leaves the specific action of the paralysing drug to act alone. Such a medium is a 0·9 per cent. solution of common salt at the body temperature.

Braun also has shown that hydrochlorate of morphia produces no lasting analgesic effect except by adding to the specific gravity of the water in which it is dissolved, and that in watery solutions of from 4-1 per cent. it produces increasing injection pain and anæsthesia, which only diminish when a 0·6 per cent. solution of sodium chloride is added. He concludes, therefore, that the addition of morphia to Schleich's solution is useless. The effect of the morphia is a general and not a local one.

Braun employs eucaine β in preference to cocaine.

Cocaine is the more powerful drug, but is irritating; it has been proved to be toxic even in weak solutions; it must be freshly prepared, and is liable to become decomposed by boiling, it cannot therefore be readily sterilized. Eucaine β, on the other hand, is four or five times less toxic than cocaine; it keeps well, is not destroyed by boiling, and is cheap.

The composition of Braun's solution is founded upon the results of his experiments:—

Eucaine β, . . .	0·1
Sod chlorid., . . .	0·8
Aq. distill., . . .	100·0

This gives, when warm, a fluid which is osmotically and chemically indifferent, and allows the specific effect of the eucaine to act alone on the nerves. This solution has a freezing point nearly equal to that of the normal fluids of the body.

Hydrochlorate of tropacocaine, recommended by Custer in solutions of the same strength as Schleich's but without the addition of morphia, is said to be equal to cocaine in its anæsthetic powers and nearly three times as less toxic. Braun places tropacocaine between cocaine and eucaine β as regards its toxic properties.

A recent paper by Harvey Cushing, already referred to, on the local anæsthesia in radical cure for hernia, is a valuable contribution to the subject. Cushing employs Schleich's No. 2 solution and has found it to be without the objection usually urged against cocaine solutions, viz., toxicity and dissolution when sterilized. He has not found eucaine β superior to the 0·1 per cent. of Schleich, and has been impressed by the fleeting nature and tardy appearance of the anæsthetic produced by Braun's solution. He has never met with toxic symptoms after the use of a 1·1000 cocaine solution, greatly in excess of the quantity needed for the longest operations, and has found that one or two sterilizations fail to diminish its efficiency. Cushing has also observed when he has made long skin incisions over an area rendered anæsthetic partly with Schleich's solution and partly with Braun's solution, that if the operation were prolonged over an hour, pain was felt when the stitches were introduced into the eucaine area, but none in that infiltrated by cocaine. The greater toxicity of cocaine proved no objection to its use, provided weak enough solutions be used.

Method of using the Solution

The anæsthetic solution may be employed—(*a*) By infiltration of the skin and then of the deeper structures. This method is painful if made into inflamed parts, and may carry pathogenic organisms into the blood-vessels. (*b*) By circumferentiation, *i.e.* by surrounding the area to be operated upon by a ring of injections into the skin and subcutaneous tissues. This method is useful where the operation is limited to the skin and subcutaneous tissue. (*c*) By regional anæsthesia, *i.e.* by injection close to, or after exposure of, into, the nerve trunks supplying the region to be operated upon.

The solution employed must be sterile. A convenient method for making the eucaine β solution, recommended by Barker, is to have powders made up containing three grains of eucaine and chloride of sodium, which, when boiled in seven ounces of distilled water, gives the solution employed by Braun. Tabloids containing the requisite quantity of cocaine or eucaine which could be dissolved in the sterile and warm solution would be still more convenient. The syringe for injecting the fluid must be capable of being rendered sterile by

boiling, and of holding at least 10 c.c. An ordinary antitoxine syringe fitted with needles of various sizes, the finer being used for the skin and the coarser for the deep parts, is convenient. Barker employs a syringe with screw action on piston rod, but which also can be filled and emptied in the ordinary manner.

The usual method of making the injection is as follows :—

The needle is introduced under the skin obliquely, a few drops of the solution is forced out, the needle is thrust deeper and deeper while more fluid is injected in various directions until the parts to be operated upon are thoroughly infiltrated. Finally, a fine needle may be thrust under the epidermis and an injection made in the line of the proposed skin incision.

The following steps in the procedure are of importance. The injection should be made slowly, its site being determined by a knowledge of the distribution of the cutaneous and deeper nerves supplying the area of operation. At least five minutes must elapse after the injection is completed before the skin incision is made.—A frequent mistake is not to exercise sufficient patience.—As the incision is deepened more of the solution may with advantage be injected layer by layer in order to anæsthetise any nerves which may not have been affected by the preliminary injections. The satisfactory results obtained by attention to the above details will be readily appreciated by giving the method a trial.

The quantity of solution used will depend upon the extent of the operation. It will usually vary from 10-60 c.c. There is no risk of toxic symptoms arising provided the solution be sufficiently dilute, viz., 1-1000 of either cocaine or eucaine ; as much as 300 c.c. of the latter have been injected without any ill effects.

When it is necessary to anæsthetise individual nerve trunks, Cushing injects ½ to 1 per cent. sterilized solution of cocaine or eucaine β directly into the nerve.

The method of Oberst, introduced according to Gerhardi two years before that of Schleich, is useful in operations upon the fingers and toes and perhaps the whole hand or foot.—An elastic band is placed tightly around the member on the proximal side of the lesion. The injection is made through healthy tissue as close as possible to or even into the nerves supplying the part. The elastic band intensifies the action of the drug and also avoids the risk of toxic symptoms. As strong a solution as 1 per cent. may be used, but this is seldom required.

This method is specially suited for operations upon the fingers and toes, such as for whitlows, in-growing toe nails, and amputations. Schleich's method when employed in inflamed tissues is painful.

Preparation of the Patient

Braun and Hentze found that it was easier to produce analgesia of the skin after alcohol had been taken. It is therefore advisable to give some stimulant half an hour before the operation is begun, and this may be repeated during the course of an operation if it be a prolonged one. It is better not to operate upon patients when fasting. A nutritious meal of egg beaten up with milk, to which the stimulant may be added, ought to be given half an hour before the operation. The obvious objection to this plan is the risk from vomiting if it should be necessary to have recourse to general anæsthesia before the operation is completed. This objection may be overcome by administering the food in the form of an enema.

The addition of morphia to the solution may be dispensed with, but a hypodermic injection of $\frac{1}{8}$ gr. three-quarters of an hour before, and repeated shortly before the operation, is valuable. The importance of the tendency of morphia to produce constipation and distention must however be borne in mind.

Sometimes it may become necessary during the course of a prolonged operation, and in the case of a nervous patient, to employ a general anæsthetic. A few inhalations of chloroform —not enough to produce loss of consciousness—as a rule suffice. Cushing states it is remarkable how small an amount of general anæsthesia is required to benumb sensation. The morphia-cocaine-chloroform method is exceedingly successful. The first and last drugs are merely adjuvants of the cocaine, which in the majority of cases is alone sufficient.

Case Suitable for Local Anæsthesia

The infiltration method can only be employed satisfactorily in cases where the tissues can be œdematised. In cases not suitable for infiltration the method of injecting weak cocaine or eucaine solution close to or into the main nerves of the part frequently enables the surgeon to dispense with the use of a general anæsthetic.

Infiltration is useful in the removal of small simple tumours and possibly for very limited malignant ones, especially of the skin. It is important to infiltrate the deep surfaces of such tumours as well as the superficial and surrounding tissues.

The method of Oberst is very satisfactory for amputations of fingers and toes, and has been employed for major amputations. For bones and joints local anæsthesia is suitable only for operations in limited areas by injection under the periosteum and where Oberst's method can be employed. It is not applicable to cases of acute osteomyelitis. Recently, ununited fractures of

the clavicle and patella have been wired, osteotomies performed, semilunar cartilages excised, joints straightened, and iodoform injected into joints under cocaine.

Braun has removed portions of the skull and drained the frontal sinus and antrum. The method is not suitable for operations upon the jaws.

Except in children, it may almost be considered the method of choice in tracheotomy. It has been satisfactorily employed in excision of half of the larynx.

Kocher's views upon the use of cocaine in goitre are so well known that they need not be referred to. He has demonstrated cocaine to be almost a *sine qua non* in all cases in which there is any tracheal compression.

Infiltration anæsthesia is of great value in cases of empyema, and except in extremely nervous patients and in children a general anæsthesia is not necessary. A portion of rib can be excised and the pus evacuated with the infliction of little more pain than that caused by an aspirator needle.

The use of cocaine or eucaine by the infiltration method has enabled surgeons to perform abdominal operations with safety in cases in which the administration of general anæsthesia is attended by risk. The method is especially indicated where patients are feeble, such as in gastrotomy or gastro-enterostomy, and in operations for the relief of intestinal obstruction where surgical treatment has been delayed.

The list of abdominal operations in which local anæsthesa has been successfully employed, includes gastrostomy, gastro-enterostomy, resection of the pylorus, closure of ruptured jejunum, and of ruptured typhoid ulcer, resection of the intestine, and removal of the appendix, cholecystostomies for empyema of the gall bladder, ovariotomy, and exploratory and drainage incisions.

It has been found that handling, resection and suture of the intestine is unattended by pain; the handling of distended gut is sometimes painful, but section, puncture, or gentle manipulation of inflamed intestine is painless; amputation of the appendix is painless. Abdominal adhesions, when separated, cause pain, and any attempt to drag upon the omentum causes pain similar in character to that of peristaltic cramp.

Reference has already been made to the valuable paper by Harvey Cushing on local anæsthesia in the radical cure of hernia. The author records thirty cases of radical cure (some of the hernias being strangulated) most of the operations being performed upon patients to whom the administration of a general anæsthetic would probably have been attended by danger. The importance of a knowledge of the nerve supply

of the region to be operated upon is well brought out. The author adds in a footnote, that in consequence of observations upon the nerves of the inguinal region, published in the paper, the operation under local anæsthesia has come to be the "operation of choice" even in cases where the use of a general anæsthetic is not contra-indicated.

In operations for hæmorroids, fissure and fistules in ano, local anæsthesia is convenient and satisfactory. It may almost be said to be the operation of choice in the ligaturing of internal piles. If due care be taken the sphincter can be stretched painlessly.

Suprapubic cystotomy can be satisfactorily carried out under local anæsthesia, and also operations for varicocele, vasectomy and castration, provided the ileo-inguinal nerve is carefully cocainised.

Local analgesia presents certain disadvantages. The fact of the patient being conscious of what is going on limits its application in nervous persons and renders it unsuitable for children. A certain degree of pain is experienced, but this can be reduced to a minimum if the injection be made with care. The œdema produced by the infiltration may mask anatomical details in the area of operation. More time may be consumed in the operation.

The advantages are great in minor general surgery, especially where the operator is shorthanded, and in major operations where there may be risk from a general anæsthetic.

That the infiltration method of rendering surgical operations painless is capable of widespread application is evident from the number and variety of cases in which it has been employed; it will, moreover, provided due attention be paid to the necessary details, prove efficient in the hands of those who have not previously made use of it.

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GYNECOLOGY

By R. C. BUIST, M.D., M.R.C.P.Ed.,
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On accidentally leaving Foreign Bodies in the Peritoneal Cavity.—Franz Neugebauer, who is surely the most indefatigable of case collectors, was recently summoned as expert in an action for damages brought against Prof. Kosinski. Two artery forceps were left in a case of ovariotomy, the death of the patient occurring from pressure ulceration into the left external iliac artery, and Neugebauer has used the occasion for a collection which he has now exhaustively analysed and published (*Monats. f. Geburtsh. u. Gyn.*, 1900, Bd. xi., pp. 821, 933). The results are of considerable interest. The whole collection is 108 cases: in 31 a sponge was left, and in 35 gauze; in 19, artery forceps, and once a clamp; among the rarer derelicts are drainage-tubes, bits of a broken glass irrigator, and a signet ring. Such accidents have occurred in the practice of the most experienced operators, Lawson Tait, Spencer Wells, Braun, Leopold, Olshausen, Kelly, and others of equally good repute being found in the list. Some of these lost bodies have been missed at the time of operation, and a few have been removed by immediate re-examination of the peritoneal cavity, but a large number have been only discovered post-mortem. Of these latter 19 were sponges, 8 gauze swabs, and 7 forceps. Sponges are particularly liable to disappear in this way; they are so easy to tear when the size does not exactly suit, and this addition to the regulation count is so easily forgotten. The only accident I have seen arose in this way during a hysterectomy for myoma, and was not discovered till after the death from sepsis. Gauze was only 8 times found by necropsy, and the contrast of the figures for gauze and for sponges is an eloquent testimony to the difficulty of sterilizing the sponge. Gauze seems to have a special aptitude for ulcerating into the bowel. Once there, it may be discharged spontaneously per anum, or it may cause abscess, and give rise to fæcal fistula.

When a foreign body has been left, trouble arises soon if it be at all septic. In these cases the patient may be saved by prompt interference. If the body has been aseptic, it may be a long time without giving any serious trouble. In one case a gauze swab was discharged after a dose of castor oil, given for constipation, twelve years after the operation; and several other patients had forceps, swab, or drainage-tube in the abdomen for many months, or even a year or two. In a goodly number of cases there has in time arisen indication for further operation;

sometimes the opening of an abscess or the dilatation of a fistula, or it may be the re-opening of the abdomen. In these the risk of tearing the bowel, or of having a fæcal fistula, is very great, and one or two have developed pyæmia. Neugebauer discusses the legal aspects of the question, especially from the aspect of action for damages for unskilful handling, and not without warmth. "They demand that the surgeon should act the Good Samaritan, and for every unlucky accident put him in the dock."

In some of the cases it seems almost incomprehensible how the accident could have happened, but that it has happened so often, and in the hands of experienced and good surgeons, shows that, as Saenger says, "It is one of the risks of operation, and as such must be accepted by the patient." When anything has been missed, what is the duty of the surgeon? If the peritoneum is still open, he must again search the cavity thoroughly; but if it is closed, must it be immediately re-opened, or may he wait in the hope that the missing article is elsewhere, or will not give trouble? Spencer Wells waited twenty-four hours in two cases, but had then to remove a sponge. In two others gauze was left, in the hope that it would ulcerate out. It did, but one patient died of pyæmia. The risk of waiting will probably be less and less as sponges become, by disuse, less often the missing articles; otherwise the question will be decided by the probability that the body is really in the peritoneum, and by the condition of the patient for immediate prolongation of the operation. If there is the slightest suspicion that any foreign body may have been left, the first sign of trouble must be the summons to immediate operation; and it is a curious and important fact that these secondary operations are well borne. In cases where we have no suspicion that anything has been left, it would, in view of the large number of cases where the body has not been missed, be good routine to operate early when signs of trouble arise. It is specially in large and difficult operations that the accident may happen. Forceps on a bleeding point tear off, a swab or gauze pad is displaced in our manipulations and wanders among the bowels, or a sponge is torn to a more suitable size, almost unconsciously. Are there any more effective precautions than the usual one of counting all the instruments and swabs?

How shall we avoid such accidents? Kelly, who on other grounds advocates systematic examination of the peritoneal cavity as the routine practice in coeliotomy, deals with this question (*New York Medical Journal*, 1900, March 24, Vol. lxxi. p. 405). He summarises his practice in a series of rules.

1. Always commence with a definite number of pieces (I

begin my operations with seven marine sponges and nine pieces of gauze, an ample provision for an average case).

2. Write down on slate or paper the number of pieces in use.

3. If more are added, it is the duty of the assistant to instruct the nurse to write them down at once, and to ask how many she has recorded.

4. Avoid entirely the use of small pieces of gauze and small sponges.

5. Avoid packing gauze up in the abdomen out of sight.

6. A piece of tape attached, as Boldt suggests, to the corner of gauze and left hanging out of the wound with forceps attached is a safe tracer, but has failed as an absolute safeguard.

7. Sponges may be inclosed in gauze bags with similar tracers.

8. The operator should put the simple questions, at the close of the operation, How many pieces of gauze are called for, and how many sponges are called for? These should be answered without circumlocution by giving the simple numbers wanted. (In order to keep my assistants on the alert, and as a means of training them to be extremely careful, I occasionally hold back a sponge or bit of gauze, and do not give it up until they insist that it is wanting.)

9. Never under any circumstances muddle the count by cutting the gauze or dividing a sponge.

10. Make two persons responsible for the number of pieces used and for their production at the end of the operation, the nurse and the assistant who handles the sponges. Where fewer assistants are employed it may be necessary to rely upon one.

11. Discarded gauze or sponges must be placed in a special receptacle, never mixed up with towels, soiled dressings or sheets, or, worst of all, carried out of the room during the operation. I have had made a rack to assist the counting. It is a wire frame with six sharp vertical pins and six double horizontal arms. Sponges are spiked on the sharp uprights, gauze thrown on the horizontal arms.

12. The surgeon must always exercise his vigilance in noting everything put into the abdomen, and it may be of service to say aloud ". . . pieces are now in the abdomen."

13. An examination should be made in every case to see by actual inspection and touch that nothing has been left behind. This will not be pushed to extremes unless an article is missing.

As a prophylactic for the surgeon against vexatious actions

for damages, the annual investment of ten shillings in the Medical Defence Union seems preferable to asking the patient to sign a guarantee of immunity for the surgeon. This, as Neugebauer, who has adopted the plan himself, feels, is too like signing one's own death warrant.

DISEASES OF CHILDREN

By R. G. M'KERRON, M.A., M.D.,

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Cyclical Vomiting.—In the *Revue Mensuelle des Maladies de l'Enfance* for May, periodic vomiting and its treatment in children is discussed. The etiology of cyclical vomiting, as it has been termed by American physicians, by whom it has been more especially studied, is still somewhat obscure. It is doubtful, indeed, if all cases can be referred to one origin. It occurs in older children, whose family history usually shows a distinct gouty or neurotic tendency. Holt thinks that, as a rule, it is to be ascribed to a general derangement of nutrition which is in some way connected with the formation and excretion of uric acid. In support of this view he gives the results of the urine analysis in a case that came under his observation. Before and after the attack the urine was normal, and the ratio of uric acid to urea 1:54. The attack lasted two days, and on these the ratio was respectively 1:157 and 1:132. Subsequent attacks gave practically identical results.

While the etiology is thus uncertain, the clinical features of cyclical vomiting are quite characteristic. There is a brief prodromal period, in which the child suffers from malaise, altered disposition, loss of appetite. The features are drawn, and black circles show under the eyes; tongue coated, and stools sometimes clay coloured. Usually there is some temperature, which may be as high as 103. All at once vomiting supervenes, severe, uncontrollable, attended with greater or less prostration. During the attack the temperature, especially if high, falls somewhat. The vomiting continues for a variable period—12 to 48 hours—though cases are recorded of much longer duration. The intervals between the attacks are also variable. The child's temperament may modify the character of the attack, which may be attended with insomnia and night terrors, or may even begin with convulsions.

Treatment must be largely directed to the underlying dia-

thesis, and success will best be achieved by attention to hygiene, in its widest sense, and to diet. Moderate physical exercise should be enjoined; fatigue, bodily and mental, must be avoided. The diet should be carefully regulated, and should preferably be vegetarian; but vegetables which contain much oxalic acid, such as tomatoes, asparagus, etc., are to be prohibited. So also are spices, sweets, tea, coffee, and alcohol. Benefit will often be obtained from massage, the whole body being rubbed for five minutes every night, while cold sponging is employed in the morning. It is recommended that, for a week or so at intervals, the child should take twice daily a powder containing bicarbonate of soda, calcined magnesia, and powdered nux vomica, along with an occasional calomel purge.

During the attack there is not much to do. In the prodromal stage calomel may be given. The child should be guarded from all excitement. Iced milk and lime water, or iced water, may be given at intervals, if the gastric intolerance is not too great. Convalescence is rapid; the child then returns to the regimen indicated above.

Lesions of the Liver in Young Children.—A valuable contribution to our knowledge of various lesions of the liver in infants and young children is made by Freeman (*Pediatrics*, Feb. 1900). His observations are based on 496 practically successive autopsies, and yield results which are at variance with the views expressed in text-books on children's diseases.

He first remarks on four cases of "descended liver," in which the organ was found to have slipped down the right side of the abdomen as far as the pelvis, the upper surface of the liver being directed to the right side. In three of the four the liver was enlarged. These cases are interesting chiefly from a diagnostic point of view.

The most common lesion of the liver in children is fatty infiltration, which was found in 202 cases, or 41 per cent. In only 64 of these was the liver appreciably enlarged. The enlargement was sometimes great; indeed the author states that he has "never seen an excessively enlarged liver in a child under five years of age that was not due to fatty infiltration." As to the origin of fatty liver, the author's conclusions are in conflict with the current view, which regards wasting diseases as the most common cause. In 180 cases in which the liver was fatty and the condition stated, the child was well or fairly nourished in 53 per cent., while only 10 per cent. were markedly emaciated. Fatty livers were much more often associated with acute infectious diseases and gastro-intestinal disorders than with chronic wasting disease. Neither simple marasmus nor uncom-

plicated rickets showed a single case, while syphilis showed but one moderately fatty liver.

Cirrhosis was seldom found. Two marked cases are recorded—both in older children with no history of alcoholism, but who had both had measles not long before. The onset was sudden, the course rapid, and attended with ascites. Both livers were hob-nailed, and showed evidence of very active interstitial change.

Several instances of focal necrosis—which the author defines as "the local action of bacterial toxins usually at a distance from the seat of the bacterial growth"—were met with associated with various diseases, diphtheria, lobar pneumonia, etc. It was found four times in fourteen consecutive autopsies on measles cases, in two being evident on gross examination. He points out that this has not been previously described as a lesion of measles.

Endocarditis occurring in the Course of Tonsillitis.—An important communication by Packard opens the first number of the *American Journal of Medical Sciences* for this year. The scientific interest of the paper lies in the collateral evidence it affords of the infectious nature of acute rheumatism, the etiology of which, as Packard remarks, is one of the most interesting questions in medicine at the present time. Its practical value consists in drawing attention to the serious affection that may complicate a seemingly trivial disorder.

It is now well known that in children endocarditis may occur in the course of an articular rheumatism so mild as to be overlooked or neglected, but in few of our text-books is it recognised that inflammation of the endocardium may similarly complicate an attack of tonsillitis or of simple catarrhal pharyngitis. Packard reports five such cases, three being in children under seven years of age. It was not possible in all the cases to exclude absolutely the pre-existence of a murmur, but in the first the evidence of the origin of the endocardial lesion in the tonsillar attack is conclusive. It was that of a boy, aged four, whose heart had shortly before been examined and found normal. One morning he was found to have fever, sore throat and anorexia, and when seen had a temperature of 102·6, while his right tonsil was slightly inflamed. Next day slight "cardiac excitement" was noticed, though temperature had fallen to 99·2 and throat looked better. On following day, temperature 101·2, pulse 108. A short systolic murmur was heard at apex. During the night sudden pain in precordial region, and, later, pulse was 110, temperature lower, while apex beat was found to have travelled to 4 cm. to the left of the nipple line. He steadily

improved, the temperature falling to normal in a week. He was kept in bed for a week longer, till heart's action ceased to be affected by change of position. Examined a year after, a blowing murmur was still found at apex, with evidence of cardiac hypertrophy.

The author expresses the opinion that his cases were not rheumatic, but, as no bacteriological examination was made, and as, curiously enough, he makes no mention of the existence or not of a rheumatic family history, his view may be open to doubt. To accept his conclusions would open up the wide question of the etiological unity of the various affections at present classed rheumatic.

It is sufficient, meantime, to emphasise the necessity for careful management and routine examination of the heart in even mild cases of tonsillitis in children.

Kernig's Sign in Meningitis.—Acute disease in children, pneumonia more especially, is often attended with symptoms suggestive of meningeal inflammation. To be able to exclude the latter is important, but often presents great difficulty. Kernig, in 1884, drew attention to a symptom which he found in several successive cases, and which he regarded as diagnostic of the existence of meningitis. He observed that when the patient was in the sitting posture, complete extension of the leg on the thigh was impossible. Only three of Kernig's 15 cases were children, the youngest being seven. In 46 cases of meningitis Netter found this sign in 90 per cent.

Packard (*Archives of Pediatrics*, April 1900) records three cases of meningitis in children, verified by *post-mortem*, in which the sign could not be found at any time in the course of the disease. The children were all young, the oldest being sixteen months, and Packard seems to suggest that in this fact lies the explanation of its absence. He regards the sign as of undoubted value, but his observations do not permit him to say at what age it becomes more reliable.

The Treatment of Whooping Cough.—The medicinal remedies recommended in the treatment of whooping cough have been many and strange, but nothing in the nature of a specific—nothing which can claim a uniform effect—has yet been discovered. No doubt there are drugs, such as antipyrin and opium, which tend to diminish the frequency of the attacks, but, in the main, we still rely on hygiene and diet in the management of our cases.

In its severer forms the attacks are so frequent and distressing that the practitioner gladly welcomes any new sugges-

tion, but so many have been the disappointments that he not unnaturally views a fresh remedy with distrust. Antitussin, however, which is recommended by Max Helm (*Berlin. Klin. Wochens.*), has the great advantage of external and easy application. It is used in the form of an ointment—difluor phenyl 5 parts, vaseline 10 parts, lanolin 85 parts—which is rubbed well into the neck, throat, and interscapular space, after the parts have been well washed with soap and water. In the sixteen cases in which he tried antitussin, Helm claims marked success, after quinine and belladonna had failed. The fits at once become less frequent, and soon there is a marked relief in the distressing symptoms attending the fits. During an epidemic, the author thinks that the application of the remedy in the earlier stage may prevent the development of the convulsive seizures.

Helm regards antitussin as the best known remedy for uncomplicated whooping-cough. The readiness with which it can be applied, and the absence of all gastro-intestinal disturbance, should secure for it a thorough trial.

OPHTHALMOLOGY

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Injuries of the Eyes from Electric-Light Flash (William H. Fox, M.D., of Washington, *Journal American Medical Association*, October 7, 1899).—The case recorded by Dr Fox presented the following typical symptoms: temporary blinding by the flash, and intense pain in the eyes and head with marked photophobia some time after. The eyeballs showed intense hyperæmia and the pupils were contracted to a pin-point, accompanied by swelling of the lids and a burning sensation, and a feeling as if there were foreign bodies under the lids. In addition to these symptoms we may find in severe cases an actual burning of the skin of the face, the lashes, and the corneæ. The symptoms pass off in a few days according to the severity of the attack.

The various theories which have been advanced as to the cause of these injuries are discussed in this paper, the author inclining to the following theory: "There is an intense irritation of the retina from the light rays causing an instantaneous hypercontraction of the pupil and ciliary muscle, followed by a temporary paralysis of the ciliary nerve. The intense hyperæmia which

comes on later is due to the regaining of their functional activity, the light rays being concerned in the destructive process.

The treatment advised is to attempt to allay the intense hyperæmia of the ciliary body and iris and its accompanying pain and discomfort. These indications are best met by iced cloths applied to the lids, and instillations of atropine solution. The injury is rarely or never permanent, and in the majority of cases the symptoms subside in from 24 to 48 hours.

The reviewer has seen two outbreaks of so-called electric ophthalmia during electric welding, some twelve workmen in all being affected. The symptoms were of the most excruciating character while they lasted, and were exactly similar to those described by Dr Fox in his case, except that some of the workmen caught in the reflected rays had in addition well marked scorching of the skin of the face and hair on the forehead. Cocain had no effect in allaying the painful symptoms, but atropine gave considerable and speedy relief, pointing to the condition being one of ciliary spasm rather than corneal abrasion as suggested by Burnett.

The Use of Euphthalmin: a new Mydriatic (by Dr Hinshelwood, *Ophthalmic Review*, Nov. 1899).—Euphthalmin is a white crystalline powder very soluble in water. Five per cent. was found to be the most effectual, producing dilatation rapidly with the minimum of discomfort to the patient. The author made a large number of comparative experiments with euphthalmin and homatropine, and sums up the chief qualities of the new mydriatic as follows:—

1. Two or three drops of the 5% solution of euphthalmin will dilate the pupil in from 20 to 30 minutes.
2. This dilatation may be considerably accelerated by the preliminary instillation of a drop of 1% solution of holocain.
3. There is produced a paresis of accommodation, variable in amount, but always of very transient character, passing off completely in from one hour and a half to two hours.
4. There is no discomfort or feeling of irritation produced by the instillation of the drug.
5. There is no injection of the conjunctival vessels, no tearing, and no alteration of the cornea.
6. There is no elevation of ocular tension.
7. No toxic symptoms have ever been observed from its use.
8. The mydriasis disappears completely in from eight to twelve hours.

The advantages thus claimed by the author are not in our

opinion sufficient to replace homatropine and cocain mydriasis in ophthalmic practice.

A New Pupillary Phenomenon (by Dr J. Pilch, of Zurich, *Annals of Ophthalmology*, Jan. 1900).—The author has observed in the case of a paralytic a rather unusual condition of the pupil when the eyes are closed. It is really an associated movement, and consists in a contraction of the pupil when the eye is closed. His observations were made on twenty-two paralytics, twenty-five persons who were affected with catatonie, eight epileptics, seven blind, and twenty-three healthy persons. The results were as follows:—By energetic closure of the lids, contraction of the pupils were noted in 43 per cent. of the blind, 40 per cent. of the paralytics, 28 per cent. of those affected with catatonie, 25 per cent. of the epileptics, 22 per cent. of the tabetics, and 4 per cent. of the healthy. When the attempt to close the eyelids was prevented by holding them apart, a narrowing of the pupil was observed in 63 per cent. of the paralytics, 48 per cent. of the demented, 43 per cent. of the blind, 37 per cent. of the epileptics, 35 per cent. of the healthy, and 24 per cent. of the tabetics. These phenomena are observed in those cases where the pupils react slightly or not at all to light.

Dionin (by Dr Wolffberg, of Breslau, *Annals of Ophthalmology*, Jan. 1900).—Wolffberg mentions the various eye affections which are benefited by dionin, a drug closely related to morphin. It seems that the agent has the effect of exciting in a marked way an outpouring of lymph. This is evidenced by an increased lustre of the surface of the cornea, and by a greater transparency of the latter; also by absorption of inflammatory cloudings, and indirectly by a heightened sensibility of the iris to the influence of atropine. The agent is especially adapted to all corneal affections. The author has used it in combination with pilocarpin, 5 per cent. of dionin and 2 per cent. pilocarpin. This combination was used to great advantage in a case of glaucoma. His conclusions are as follows: Its property of producing a flooding of the eye with lymph makes it a most valuable adjuvant in treating all corneal affections, especially those that are not dependent on disease of the conjunctiva. It is to be recommended for treating all wounds after operations upon the eyeball, and in case of injuries to the eyeball as well as of the conjunctiva; and finally it is a valuable help in the treatment of glaucoma. The author uses this agent in either 2 per cent., 5 per cent., and 10 per cent. solution, or in the actual powder.

Protargol compared with Nitrate of Silver as used in the Credes Method (by Dr Englemann, *Annals of Ophthalmology*, Jan. 1900).—Englemann has used 20 per cent. solutions of protargol in one hundred cases of ophthalmia of the new-born, and he concludes that it is a better agent in every sense of the word than nitrate of silver. Kramer observed in a hundred cases of the same affection where nitrate of silver was used, inflammatory reaction ninety-six times, and more than once this reaction was attended with profuse secretion, which persisted for several days; and in 80 per cent. of the new-born where protargol was employed, there was either absolutely none or only very slight reaction; and in those cases where there was increased secretion, it disappeared after a day in 50 per cent., and in only 4 per cent. lasted till the fourth day. Englemann has never observed inflammatory symptoms attending the use of protargol, while he has had 9 per cent. of the cases affected with conjunctivitis after the use of nitrate of silver, and he concludes that 20 per cent. solutions of protargol possess practically no irritating properties, and that it is always to be preferred to nitrate of silver.

The Connection between Eye and Nasal Affections (by Dr Oscar Heilmaier, of Würzburg, *Annals of Ophthalmology*, Jan. 1900).—Heilmaier gives histories of 1300 cases. It is quite remarkable that in these cases only sixty-four were found where the nasal mucous membrane was normal. His views may be said to reflect pretty much those of von Michel on this subject, especially with reference to the etiology of dacryocystitis. He concludes as follows: In diseases of the tear ducts there is found, as a rule, some disease of the nose, usually rhinitis atrophica fœtida. The eczematous affections of the eye are almost always associated with eczema of the nasal mucous membrane. Catarrhal conjunctivitis with its complications is frequently caused by disease of the nasal mucous membrane. Serpiginous ulcers appear to be attended essentially by those nasal affections which most frequently appear with blenorrhœa of the lachrymal sac.

NOTICE.

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THE SCOTTISH
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CLINICAL LECTURE
ON
CARDIAC FAILURE

By A. M. STALKER, M.A., M.D.,
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THERE are a great many sets of circumstances in which cardiac failure occurs, but the condition is essentially always the same —the failure of the heart to do the work set before it. The object of the following remarks is to distinguish two or three of the principal morbid states of the heart in which failure occurs.

First, in structural disease of the mitral valve. We are all familiar now with the fact that with this affection life can be prolonged almost indefinitely. But at the same time, through all the years it lasts it now and then betrays its existence in an uncomfortable way, mostly through the shortness of breath on exertion. People get accustomed to this in a wonderful manner, and a great deal of steady routine work can be got through in spite of the disease. More strikingly is this the case with women among the working classes. A woman may have acquired deformity of the mitral valve, and yet for months and years get up to her work in the factory at six in the morning and labour till six at night. She walks slowly, she has learned to live near her work, she never goes up even the gentlest declivity if she can help it and she pauses on mounting a stair, but in most respects she spends her life in the same way as her neighbours and is a fairly capable wage earner. But

only as long as the routine of her life is undisturbed. Let an ordinary infectious catarrh pass through the house marked in the rest of the household by a day or two's cough or slight fever and ending up with a week or so of afebrile tracheal catarrh with some cough and expectoration. The subject of mitral disease takes it like the rest to begin with, but the stage of catarrh of the trachea and primary bronchi which in the others is brief and without general disturbance, is in her immensely prolonged, becomes a general bronchitis of the middle and even smaller tubes, with cyanosis, orthopnœa, scanty urine, and general malaise. Admitted into hospital in this condition she will probably recover in a month or six weeks, and will spend perhaps another month or two at her own home after going out before resuming work. After this rest of three or four months she will probably go back once more to her old employment, and may go on again for two or three years before she reappears at the hospital with another breakdown. Recurrent conditions like these are usually spoken of as failures of compensation, but there is some looseness in this use of the phrase. In structural defect of the mitral valve, (and there is not much use in distinguishing between regurgitation and stenosis as they both generally go together whatever the physical signs may be), there is always some congestion and dilatation of the pulmonary vessels. No compensation can prevent that in the case of the mitral valve. It is this chronic overfilled condition and want of room in the pulmonary vessels, the want of any reserve of power, that renders the simple epidemic catarrh which many households in a large town pass through every winter so severe in its effects in the case of pre-existing mitral disease. It is not, in the first instance, a cardiac failure we have to do with here, and it is rarely cardiac failure that is responsible for the dyspnœa in such cases. The compensatory provision present is mainly the hypertrophy of the right ventricle, and the way in which it acts, the vigorous action of the right ventricle supplementing the defective stopping power of the mitral valve, inevitably entails the pulmonary congestion. In ordinary times and with merely a routine amount of work the subject learns to adapt herself to this, but it involves a very great delicacy on the part of the pulmonary vessels.

Of course there are numerous other causes of extreme pulmonary congestion in mitral disease than ordinary colds. The patient may be constantly on the verge of bronchial catarrh and may be unable to do any work at all. All the influences which depress the tone of the tissues, privation, cares of various kinds, dissipation, all these are not without effect on the vessels of the lung, and may induce an attack of bronchitis in those who under more favourable circumstances can do something for their living.

What, then, can be strictly called cardiac failure in mitral disease? Failure of the compensatory arrangements and breakdown of the right ventricle. The view is not pressed here that there is not sometimes breakdown of the right ventricle and temporary cardiac failure in those recurrent attacks of bronchitis which have been described. There may be from the catarrh and loss of tone of the pulmonary vessels so much blood heaped upon the right side of the heart that even the hypertrophied ventricle is unable to move it on, and slight leakage takes place through the tricuspid valve. But the proof of this is not the cyanosis and the orthopnœa. To prove the breakdown of the compensation we require the evidences of tricuspid regurgitation or of hepatic enlargement and rise of venous pressure in all the areas behind the liver. Now in wonderfully few of these recurrent breakdowns are those evidences present. When they are, and not till then, we can say that the patient has not only valvular disease, but also cardiac failure. This, of course, is the natural inevitable terminal stage of every case of mitral disease as of every other organic heart affection. It is brought about in various ways. In women, the occurrence of repeated pregnancy and parturition will provoke attacks of failure of the right ventricle with rise of pressure in the portal and systemic veins, enlargement of the veins and dropsy. The vascular system may recover from more than one of these failures, but commonly before the child-bearing life is naturally closed the compensation is damaged beyond repair. Men who have to toil hard, even when not very able, in order to support their families, are also exposed to premature breakdown. In their work they are more subject to sudden and severe strains than women, and compensation is hardly ever adapted to stand an extra strain of any magnitude. For all,

men and women alike, there comes a time when breakdown is almost a natural process. After about forty-five years of age the adaptability of the body to its work ceases to be perfect. It is the period when one looks for the first traces of arterio-sclerosis, of presbyopia, and for our present purposes of permanent cardiac failure in mitral disease. Not that it must come on at this time. If a man has had little hard work or worry, and has lived fairly quietly, the day of reckoning may be put off for a good while; but even in such a case the little liberties which he used to allow himself, the good dinners, the Havana cigars, the travelling about sight-seeing—all these require to be curtailed or dispensed with more and more if he is to live within the limits which are set by the condition of his heart.

In Aortic Disease. A. From Endocarditis.—Cardiac failure in aortic disease is of course failure of the left ventricle. The clinical history is not like that of mitral disease. So long as the left ventricle is sufficiently enlarged in its cavity and muscular strength to make up in some measure for the valvular defect and so long as the mitral valve is intact the lungs do not suffer from any loss of blood pressure, and the patient may lead a comfortable enough life, quite unconscious of the disease. In this way it is more common for the subjects of aortic disease to have their affection discovered accidentally, than occurs in mitral disease. Routine examination of the pulse or heart when the person is complaining of some trifling affection quite unconnected with the heart, or examination for life insurance when he is not complaining at all, are the ways in which aortic disease is often discovered, in those cases particularly in which life has been known to have been spent in comfort for many years in the presence of the affection. In mitral disease there is an Unprotected Area—the lungs—between the seat of disease and the seat of the compensatory mechanism giving rise to trouble from the first. In aortic disease the left ventricle is the seat both of the disease and of the compensation, and no organ suffers or gives warning of anything wrong until the compensation is disturbed. For this reason we are not so familiar with prolonged periods, ten, fifteen, twenty years associated with the presence of aortic valvular deformity. Furthermore the prognosis in the case of those coming before us with cardiac complaints is very much worse in aortic affections than in the

other. It is not that the life of the patient is a much shorter one after an attack of rheumatism has caused endocarditis and cicatricial deformity of the valve. It is merely that after the patient is himself conscious that there is something wrong, the remainder of life in aortic disease is measured by months as against years in the other case. There is no proof of a convincing nature met with in practice that the one valve may not last as long as the other in a faulty condition.

Cardiac failure and breakdown of compensation is, however, not so frequently the natural end of aortic disease as it is of mitral disease. The proximity of the valve to the coronary arteries, and the extension of degenerative changes in the valves to the mouths of these vessels, bring about another set of symptoms altogether — the so-called anginal symptoms. Anginal symptoms are almost as good as unknown in disease of the mitral valve, while in aortic disease they characterise a very large proportion of the cases. Depending on the interference with the vascular supply to the cardiac muscle, these cases are sure enough cases of cardiac failure, but the failure is not in the line of the natural development of the disease. This development passes through the stages :—hypertrophy of the left ventricle, exhaustion of the hypertrophied muscle, leakage back to the lungs, and so forth through the other changes so characteristic of mitral disease. Angina rudely breaks in upon this, and may bring the patient's life to a close without a trace of dropsy or venous engorgement. More frequently than uncomplicated angina, towards the very close of life —in the last month or six weeks—it is the mingling of angina with cardiac failure which lends so distressing a character to a gradual death in the case of aortic disease. Pure cardiac failure without angina is not commonly the end of these cases. It is the product of much the same set of causes as in mitral lesions — more particularly the product of arterio-sclerosis either natural or accelerated by dissipation and hardship.

B. Aortic Disease from Arterio-Sclerosis.—If, from the age and history, the presence of other senile changes, and the absence of any mention of acute endocarditis, we can be sure that a particular case of aortic disease is due to endarteritic changes and associated with disease of the wall of the aorta, the immediate prognosis once the patient has begun to complain is

not very different—is grave from the outset. There is hypertrophy of the left ventricle in such cases, almost as marked as in the other; the product, not of the valvular disease, but of the general arterial strain. The hypertrophy had been growing for years before the valvular defect was there, and the latter adds but little perhaps to the hypertrophy. For very little compensation takes place to rectify valvular insufficiency in these cases. Compensatory hypertrophy in any part of the heart has its sphere of activity only in youth and middle life when the protoplasmic health is at its best, and at the same time the calls on our bodily activity are continuous. The subjects of aortic disease from arterio-sclerosis have been subjected for ten or fifteen years to an arterial strain which has had as its consequences enlargement of the left ventricle. But these ten or fifteen years are just the last years in which society expects the man to be working for his livelihood; and when at last the degenerative process has extended to the aortic valves, the subject is thinking of giving up work altogether. In this way we have the hypertrophy provided for us at the outset of the valvular failure, and the latter adds but little to what it found. The heart breaks down very shortly under these circumstances, and again we may have the mingling of cardiac failure and angina. The angina and the coronary symptoms are fully more frequent here than in the post-rheumatic affection, the result of the fact that the arterio-sclerosis itself may affect the coronary arteries independent of and preceding the disease of the aortic valves.

This leads me to speak of cardiac failure independent of valvular deformity.

(*To be continued.*)

THE TREATMENT OF DYSMENORRHŒA

The Opening to a Discussion, before the Obstetrical Society, Edinburgh

By F. W. N. HAULTAIN, M.D., F.R.C.P.Ed.,
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THERE is no subject which is more fitted to be discussed at a meeting such as this, than that which I have the honour to bring before you, viz., the treatment of dysmenorrhœa.

To family doctors it is a symptom for which advice is constantly desired, while with gynæcological specialists it bulks largely in their consultations. At the same time there is perhaps no more debated question than the cause of the condition, and when and how it is to be treated.

It is well, therefore, that such an opportunity presents itself to enable us to discuss the widely divergent views entertained, so that if possible our independent attitudes may tend to greater harmony as to the method to be adopted of dealing with sufferers from this common disorder.

From a professional standpoint dysmenorrhœa may be defined as "pain associated with and dependent upon menstruation, of such severity as to materially interfere with the sufferer's performance of her usual duties." As a rule the pain is local and pelvic, but in certain cases is referred to the head, stomach, and other organs; these latter, however, do not call to be considered on this occasion.

From the frequent presence of more or less discomfort along with menstruation, the lay mind has come to consider pain as a physiological attribute of the function, and some writers have even gone the length of ascribing to it the rôle (along with labour pains) of being the inheritance of original sin. Naturally therefore by a process of insidious aggravation, discomfort passes into pain, and true dysmenorrhœa of an exaggerated form is frequently taught to be borne with Christian resignation, as a gift from the gods, which it is wrong, even if possible, to attempt to ameliorate. Many young women are thus allowed to struggle through the most active years of their existence, at the commencement of each year carefully deleting from their diary two or three days every month when they are to be *hors de combat*, the supposed martyrs of their original parent's indiscretion, or of the sickly sentiment of their more immediate ancestors.

I would like, therefore, at this point to state that dysmenorrhœa, or in other words, pain at the menstrual periods sufficient to interfere with a woman's usual vocation, is to be considered at all times pathological, and is usually due to local abnormal conditions.

The causes of dysmenorrhœa do not fall to be minutely considered in the discussion before us, but in opening the

subject, some reference must be made to them so as to offer a foundation upon which lines of treatment may be based. I shall therefore treat this aspect as shortly as possible.

As is well known every author has his own classification of causes, and in the majority of instances they abound in varieties. Practically, however, they may briefly be considered as inflammatory and obstructive, alone or combined.

The inflammatory variety embraces congestive and inflammatory conditions of any of the organs physiologically concerned in the function. These are the uterus and its appendages. While the "obstructive" necessarily is confined to morbid states of the uterus alone.

A rational explanation of the pain in the latter is, that the blood which escapes from the capillaries of the uterine mucosa is impeded in its escape from the uterus. This may be by a temporary state of spasm, or by a permanent blocking of the uterine canal through flexions, new growths, or developmental stenosis. The obstructed flow naturally causes distension of the uterus from retention of blood which may or may not coagulate in the uterine cavity, and which stimulates forcible contraction of the organ for its expulsion. As the result of uterine distension and contraction pain is complained of.

When the pain is inflammatory, it is due to the vascularity which occurs before menstruation still further congesting the already inflamed tissues; the discomfort is necessarily diminished after the depletion which occurs during the flow.

Clinical features.—Dysmenorrhœa may, from a clinical standpoint, be considered as of two main types—menstrual and pre-menstrual. The former is the association of pain with the flow, the latter before the flow. As might be expected, they may both be present.

When one reflects on what has already been said with regard to the causes, it will be at once apparent how readily these clinical types can be accounted for. Thus, when obstruction alone exists, the pain must necessarily only occur at the time of, or immediately before, the flow; while, in the inflammatory variety, the pain will be most pronounced during the period of congestion before the actual flow occurs. Should the inflamed organs be confined to the appendages, the deple-

tion acquired by the flow occurring necessarily gives considerable relief; thus, the so-called ovarian or tubal dysmenorrhœa is mainly pre-menstrual in its character. On the other hand, in uterine inflammation, such as endometritis, the pain, though pre-menstrual, may be continued through the period by the contractions of the tender uterus, or by the thickened and swollen diseased mucosa offering a block to the easy exit of the menstrual blood. In the same way congested or inflamed ovaries, with endometritis, will give rise to the combined types of pre-menstrual and menstrual dysmenorrhœa. From a very considerable experience, I have found the obstructive or menstrual variety to greatly preponderate as the initial type. I should say quite 10 to 1. But what must not be overlooked is the fact that the primarily purely obstructive tends in due course to become associated with the pre-menstrual or inflammatory, the latter being a secondary result of the former. The almost everyday clinical picture might here be quoted. The young woman of twenty-five (perhaps more often married than single) complains of pain before and during her periods. From the establishment of the function she has had pain, at first menstrual and tolerable, which could be combated with hot whiskies and other handy remedies, but it has gradually increased in severity. It now lasts longer, and commences before the flow, and is frequently associated with a pain in the side, more or less constant, and sometimes with increased blood loss (menorrhagia), which reduces the patient to semi-invalidism. If married, she is sterile. The household alcoholic specifics are now inefficacious, and nepenthe and chlorodyne are ruining her digestion. The diagnosis is almost assured without examination. He who runs may read. Primary obstruction, secondary endometritis, and perhaps ovaritis!!

Treatment.—This, the main subject of our present discussion, devolves itself into the consideration of two main questions. 1st. Are we able to cure or ameliorate the condition? If so, how? 2nd. Is it justifiable to adopt local treatment with the methods at our disposal. The first heading may be answered usually in the affirmative. In its consideration one naturally must direct attention to the very different causes of the symptom, and act accordingly. Thus, in the obstructive

variety, common sense teaches us that removal of the obstruction must be the object aimed at. If a displacement, it must be rectified; if a new growth, removed; and if a stenosis, the dimensions of the canal of exit must be increased.

By far the most common causes of this type are stenosis and flexions, the latter being usually a congenital anteflexion, though retroflexion may be present in exceptional instances. In retro-displacements, replacement and retention in position is the only method to be adopted; but these, from their rarity, require no further comment.

It is the congenital anteflexion with stenosis which accounts for the great majority of cases of dysmenorrhœa, and it is to this I shall chiefly direct attention. As is well known, vaginal supports are practically valueless in anteflexions, and uterine stems are dangerous to use, therefore our treatment in these cases as in stenosis is to dilate or incise the uterine canal to such an extent that mechanical obstruction is removed.

Dilatation may be accomplished in two ways, forcible and gradual. Forcible is performed by a series of bougies of increasing size which are rapidly introduced in succession, or by means of branching dilators, Sims or Ellingers, which after introduction are forcibly expanded.

Gradual dilatation may be performed by means of tents or bougies introduced in a manner similar to that of dilating a stricture of the male urethra. In my own experience I have found the use of the tent, or the forcible dilatation by bougies up to 15 French or 10 Hegar most efficacious; but in the majority of aggravated cases as has been shown there is present a coincident endometritis, which curettage with subsequent hot vaginal douching materially assists in effecting a more rapid and permanent cure.

Incision of the cervix is not now so frequently adopted as formerly, but in well marked cases of stenosis is of much value in establishing a permanent dilatation of the cervical canal. Should it be performed care must be taken to keep the incision open by artificial means for forty-eight hours after the operation. For this purpose I have found a strip of iodoform gauze most useful.

The treatment of the menstrual variety of dysmenorrhœa by means of drugs has in my hands been most discouraging, a

result natural to expect if we assume the cause to be a mechanical obstruction. This explanation of dysmenorrhœa, as shown by the beneficial effects derived from dilatation, I unhesitatingly uphold as the only practical explanation of the origin of the pain, conversant though I am with the many other elaborate theories propounded by authors on the subject. By drugs all that can be hoped for is a temporary alleviation of the symptoms; even if this could be attained in a harmless manner much might be said in favour of the treatment. Unfortunately, however, the medicinal treatment resolves itself into the exhibition of stimulants or anodynes, both of which are objectionable from their deleterious effect on the general health and morale of the individual. There is no gainsaying the fact that many a dypsomaniac and morphomaniac can trace the origin of their degradation to the comfort gained by alcohol and opium during painful menstrual periods.

In the inflammatory and congestive forms, particularly those due to ovarian causes, sedatives such as Bromides, Gelsemium, Camphor and Hydrastis find most favour, combined with hot applications, hip baths and counter-irritants. Scores of drugs are recommended, which is the most certain testimony of their inefficacy. When primarily ovarian in origin such means are alone at our disposal; fortunately, however, primary ovarian mischief is the exception. When the ovary is implicated it is usually secondary to uterine causes, and if not allowed to become too chronic, as a rule subsides after the uterine condition has been satisfactorily treated.

When the ovarian condition is intractable it is in rare cases found necessary to perform oophorectomy. Fortunately such is a great exception and is only applicable when from special reasons it is imperative that the dysmenorrhœa be removed.

On the present occasion the point which is of prime importance, and which I trust will be most thoroughly discussed, is the justification of the local treatment of dysmenorrhœa.

In considering this all-important question one must first divide our patients into married and unmarried. In regard to the first group there can, I think, be no divergence of opinion that local examination, and if need be treatment, should in all cases be carried out.

With unmarried females, on the other hand, our lines of

conduct are by no means so clear. In treating this subject one feels they are treading on delicate ground. The fine thread of sentiment is so intimately entwined with the stronger cord of duty, that it is almost impossible to separate them without breaking the former inadvertently or voluntarily cutting the latter. Yet it has to be boldly faced ; and if from the discussion a definite conclusion can be arrived at, much will have been acquired.

In attempting to place the main points of this important aspect of the discussion before you, I should like again to emphasise my former definition of the term dysmenorrhœa as a condition which materially interferes with the sufferer's duties. I would also like to again state that my experience guides me in affirming that in the vast majority of instances the pain is due to local pathological conditions which are curable. Being clear on these points one has now to differentiate our unmarried patients into two groups : 1st, those who require by their own exertions to maintain themselves ; and, 2nd, those who are affluent and do not require to work.

Those in the first group cannot afford to lie up a day or perhaps two monthly ; their dysmenorrhœa prevents them taking or keeping good situations. Relief must be obtained. Sentiment cannot be considered, as there is as yet no philanthropic society for the upkeep of dysmenorrhœic women.

The second group are under very different auspices. They can if they so please afford to lie in bed encircling a hot bottle, and by means of stimulants and anodynes, pass twenty-four or forty-eight hours every month in more or less comfort. All they miss is some social engagement or evanescent pleasure.

It is the treatment of this class which must form the main theme for discussion ; they are those with whom we are in more intimate social relation, and naturally therefore with whom our sentiment is more apt to predominate.

The question pre-eminently to be faced is : are we to allow for merely sentimental reasons these young women to suffer, if they desire to be cured ? Personally I cannot consider with favour any such line of action. My line of treatment is to examine them locally under an anæsthetic, and at the same time be prepared, should dilatation, uterine reposition, or curet-

tage be indicated, to perform the necessary manipulation there and then.

Among the many sentimental objections one of the most common is that local manipulation directs attention to the sexual organs. I should very much like to know if being *hors de combat* every month during the sexual function will not be more potent in the same direction. I cannot conceive any argument in favour of allowing dysmenorrhœa to continue. It is said, and with truth, that it may improve spontaneously. So does fissure of the anus! Yet it is treated whenever complained of. In the majority of instances the menstrual pain tends to become aggravated as time goes on, and further, of more importance, as I have frequently noted from observation, tends to set up ovaritis which is most intractable and often incurable. Why therefore allow it to continue? Is there any real objection to treatment in the manner I have indicated? In the married women local treatment is routine. In the poorer classes it is essential. Why is it condemned in the affluent? If we are to be sentimentally consistent, the sooner a philanthropic society such as I indicated is started the better. There can be no excuse for material reasons alone to disturb the morale of the industrious woman by directing her attention to her sexual organs through local treatment to obviate pain. Doubtless each individual case is presented under different aspects: we as medical attendants are there to advise not to insist. What position are we to take up? Are we to go on treating by drugs which are not only useless in curing the condition but are often harmful, hoping that in due course a spontaneous cure may take place, or as I have so frequently heard repeated, to tell the mother "that when her daughter gets married she will be cured if she has a baby." Comment on this latter prophetic prognosis is almost superfluous were it not so common. I can only say, however, that the great bulk of primary sterile women who have passed through my hands are the subjects of dysmenorrhœa, and in those in whom the sterility has been cured it has only been when local treatment, such as has already been indicated, has been adopted and the dysmenorrhœa removed.

To parents the idea of local interference is repugnant; but there are happily few who if they know that much can be done

on these lines to lessen the sufferings of their daughters, will from *minauderie* veto its attempt. The medical attendant is the counsellor; it lies practically with him.

Personally, I consider that in all cases where simple drugs have failed to relieve the condition, a local examination under an anæsthetic is the correct mode of procedure, the examiner being prepared there and then to treat any minor abnormality present.

I am no partisan to tinkering with the sexual organs, and I trust I am not debased enough to be devoid of sentiment. When, however, it runs riot with reason and is a direct menace to health and happiness, it ceases to exist and degenerates into prudery.

By local treatment such as I have described I have yet to see, hear, or read of an example where a patient has lost her own self-respect or the regard of her friends; on the other hand I personally know many who through false modesty or ignorance have led a hampered existence which they bitterly regretted, when after rational treatment they had been cured and thus enlightened.

CASE OF ACUTE ASCENDING PARALYSIS DUE TO INFLUENZA

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POST-MORTEM EXAMINATION

By ROBT. A. FLEMING, M.D., F.R.C.P.Ed.,
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THE influenza organism is one which can affect injuriously practically all the systems of the human body. When it affects the nervous system it can bring about a manifestation of one or other of practically all the symptoms of nervous system diseases. It can produce mental disturbances—paraplegias—hemiplegias—monoplegias. It can pick out certain strands in the cerebro-spinal axis and can induce the symptoms of a lateral sclerosis—a progressive muscular atrophy or even a locomotor ataxy. It can produce a poly-

neuritis, and it can pick out certain nerves for the manifestation of its injurious effects. Oculo-motor paralysis we used to be told—wherever we find it—we must ascribe to syphilis. I believe we must modify our opinion since we have made the acquaintance of influenza.

During the winter and spring of this year I had the opportunity of witnessing the effects of the actions of the influenza poison on the nervous system in a manner which I had read of, but never had seen before. This was as inducing a rapidly progressive paralysis of limbs and trunk from below upwards in the manner described as Landry's paralysis. I saw this in three cases, and curiously they all occurred within a few weeks of one another. I shall only give the details of one—the one in which the diagnosis was verified by *post-mortem* examination, but I should like to say that this one as regards age and sex of patient, symptoms and course, was almost identical with one of the other two.

Mary M., aged twenty-three, a housekeeper, residing in London, but on a visit to friends in Edinburgh, was admitted to Ward 33, January 31st, 1900. Her complaints were pains specially in the head and back, and she looked very ill and was at times delirious. Her illness had begun two weeks previously.

Her family history was not satisfactory; Bright's disease and heart disease were present, and there was also a family history of insanity. Her home was comfortable, her work not too hard, and she had been careful and regular as regards diet.

Previous illnesses.—She had had measles when a child, and in May last she seems to have had an attack of influenza, the symptoms being mainly headache and pain in the back. She recovered readily, and three months ago, a small fatty tumour was removed from her back. From this she recovered readily.

Present illness.—This began a fortnight ago, just as the wound in the back was healed. She felt she had another attack of influenza and complained of headache, and had vomiting and constipation. A week before admission the headaches became very severe, and she became very weak and very sleepless at night, calling out continuously and apparently meaninglessly, so as to require constant attendance. As day

after day passed, she remained much in the same condition, complaining of headache and pains all over and being so restless and noisy at night that it was thought by her friends that she would have to be sent to an asylum. Now and again for short intervals she became quieter and fairly sensible, and then she often complained of a lump rising in her throat.

On the morning of January 31st I saw her for the first time. Temp. 103° ; pulse 130, regular and of fair strength ; resp. 22. She would not answer questions, and kept crying out mostly "Oh, dear!" and "Oh!" She lay on her back, and did not move her legs or arms, and I ascertained that the fact that she was not moving her legs at all had been noted the day before. The urine and fæces were being now passed in bed, but to some extent she was yet indicating when she required the bed-pan by calling out and by restless movements of the head.

Cutaneous sensibility to touch and pain seemed all over little impaired. Her pupils were distinctly dilated. Voluntary motor power in the legs and arms appeared lost, and the muscles were flaccid.

The abdominal and lower costal respiratory movements were not well marked, but there occurred no distinct diaphragmatic paralysis.

By questioning the friends and by watching the patient I tried to ascertain the presence of Cheyne Stokes breathing. It was certainly present, but curiously it seemed to be absent when she was deeply asleep.

Superficial and deep reflexes in legs and arms were absent.

Swallowing seemed to be becoming impaired to-day.

Realising that this was a very anxious case, I advised her admission to the Infirmary at once.

State on admission.—She appeared more sensible, and complained of the lump in the throat, and then suddenly she began to breathe very rapidly—about 60 per minute for 30 seconds—and then became quieter and spoke of pain behind the sternum.

Her speech was somewhat slurring—the upper lip not moving well.

Swallowing was performed with some difficulty, tending to cause choking ; and paralysis of arms and legs was noticed.

At 8 P.M. she appeared rather better, but said she could not move her legs or arms, and her muscles were flaccid. Temp. 99·4 ; pulse 130. Shortly after this curious nodding and shaking movements of the head occurred, and she began to cry out "murder."

Digitalis and chloral were given, and soon she fell asleep, and awoke about 11 P.M., expressing herself as better, and looking more sensible.

She went to sleep again, and about 1 A.M., the nurse noticed that her breathing was very quiet. In a few minutes she quietly died.

Post-mortem Examination and Microscopic Examination

The *post-mortem* examination was performed the day after death. The body was fairly well nourished, and the muscularity fair. Lividity was slight and rigidity marked.

Thorax.—Heart weighed 8 oz. The left ventricle was firmly contracted, and the right was flaccid. Arterial valves were competent. Orifices were fairly healthy. Muscle of heart was fairly healthy in appearance, although somewhat flabby.

Lungs.—Right, 15 oz. ; *Left*, 12 oz. Lower lobes were slightly œdematous and congested, and there was commencing broncho-pneumonia near the root of the left lung.

Abdomen. —Liver, 3 lbs. 2 oz., showed marked cloudy swelling ; and *Kidneys—Left*, 5 oz. ; *Right*, 6 oz.—showed similar changes.

Spleen, 3½ oz. Although it was of small size it showed distinct acute congestion with numerous small hæmorrhages scattered over the cut surfaces.

The other abdominal organs were healthy.

Nervous system.—Brain, 3 lbs. 2 oz. Dura mater was firmly adherent posteriorly over vertex. Sinuses contained no clot. The convolutions of both hemispheres were slightly flattened, most markedly perhaps over the right Rolandic areas.

Pia-arachnoid was somewhat thickened. On section the brain was found to be œdematous, and the grey matter of cerebrum, pons, medulla, and cord was markedly congested. There were no visible hæmorrhages, and further than the congestion of grey matter the spinal cord was healthy.

Microscopic appearances.—1. There was no degeneration in any of the tracts of the spinal cord, although Lissauer's tract appeared to stain somewhat faintly in many of the segments of the cord examined, including the lumbar and cervical enlargements. Weigert's chrome-alum copper solution and osmic acid were used for fixing and staining the cord, with the usual counterstains.

2. There was great engorgement of the vessels in the grey matter of the cord, and especially the anterior cornua; and portions of the cord fixed in corrosive sublimate and embedded in paraffin showed numerous minute hæmorrhages, which perhaps should be more correctly described as microscopic diapedeses of red blood corpuscles. Many leucocytes or lymphoid cells were also noted in the grey matter of the cord, and were certainly in abnormal numbers around the multipolar cells, especially of the lumbar and cervical enlargements. The minute hæmorrhages were also more numerous in the enlargements.

3. The multipolar cells of the anterior cornua were shrunken, were somewhat deeply stained with Toluidin blue and other basic dyes, and the nuclei were displaced towards the periphery of many of the cells. A small proportion of the multipolar cells were normal, and these were most numerous in the upper cervical segments. The cells of Clarke's vesicular columns were unaffected.

4. Many of the cells of the nuclei in the medulla were swollen, stained feebly and homogeneously with Toluidin blue, showing marked chromatolysis and disappearance of much of the chromatic substance altogether from the cells. An attempt was made to locate the nuclei which showed these cells in greatest number; but all that can be stated is, that the change was not limited to motor nuclei alone, and that the nuclei in the upper third of the medulla were less affected than those in the lower two-thirds. The engorgement of vessels and minute microscopic hæmorrhages were present in the medulla, although the hæmorrhages were not so numerous as in the cord.

A weaker solution of corrosive sublimate than intended was used for fixing the portions of cord and medulla, but the fact that certain cells, such as those in Clarke's vesicular

column, were neither shrunken nor swollen but fixed and stained normally, obviates to some degree the criticism that the cell changes were artificially produced.

Most unfortunately, the nerves were not obtained for examination, but the nerve roots appeared to be healthy.

Hæmorrhages, and swelling, and atrophy of nerve-cells, have been recorded in several cases by Gombault, Leyden, and others, and in a number of equally carefully investigated cases no change of any kind has been recognised.

Modern methods are unquestionably throwing more light on the intricate problem of cell-changes, and it seems hardly credible that a toxine capable of completely and incurably paralysing nerve-cells can fail to produce a recognisable interference with cell structure.

ON CLEANSING THE PERITONEUM DURING CŒLIOTOMY

Read before the Edinburgh Obstetrical Society

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WHEN the peritoneum requires to be cleansed during operations, the contaminating discharges are best removed by irrigation. But irrigation of the peritoneal cavity, like drainage, is not so frequently resorted to as formerly, because abdominal surgeons have now more confidence in their technique and in the peritoneum itself.

The surgeon can now conduct an aseptic operation, and by the adoption of the Trendelenberg position he is able to see and securely ligature bleeding points, and cover raw surfaces over with peritoneum. He also knows that the peritoneum when its absorptive power is unimpaired can dispose of fluids and minute solid particles without peritonitis being produced, and further that it can even resist successfully the invasion of pyogenic bacteria. But whilst the surgeon recognises the ability of the peritoneum to rid itself of injurious material he will consider it his duty, when the cavity is contaminated, to relieve the peritoneum of this function as much as is in his power. This, as I have said, is best accomplished by irrigation.

The gynæcological surgeon will consider it necessary to irrigate the whole of the peritoneal cavity in cases of ruptured tubal pregnancy when the cavity contains blood; in cases of ovarian cysts which have ruptured into the peritoneal cavity before or during operation. Also when any of the contents of an ovarian tumour have escaped into the peritoneal cavity during aspiration before extraction. This should be made an absolute rule whenever we have any suspicion that the cyst may contain papillomatous or malignant elements. About fourteen years ago I opened an abdomen distended with ascitic fluid and found the whole of the interior studded over with papillomata. Some years previously a surgeon had removed an ovarian tumour from this patient, but had tapped the cyst a few days before the operation. The fluid which escaped into the peritoneal cavity at the tapping had infected it.

Another case which impressed me with the need for regarding with concern the escape of ovarian fluid into the peritoneal cavity occurred about ten years ago. The surgeon performed an uncomplicated ovariotomy, but during the operation some fluid from the interior of the cyst escaped into the peritoneal cavity and over the wound. A year afterwards the operator asked me to see the patient on account of malignant thickening of the cicatrix, the lower part of the abdominal wall, and the pelvic peritoneum. The surgeon will also irrigate the whole abdominal cavity when a large abscess has burst and the pus is distributed among the intestines. Likewise when much hæmorrhage has attended the removal of a large ovarian or other tumour. Also when the walls of the intestines have been injured.

The foregoing remarks relate more particularly to contamination of the general peritoneal cavity, but the chief object of this communication is to draw attention to the treatment of contamination caused by pus which has escaped into the pelvic cavity during the removal of such conditions as pyosalpinx and ovarian abscess.

In removing pus sacs of the appendages the surgeon will place the patient in the Trendelenberg position. After opening the peritoneal cavity he will most likely encounter the omentum adherent to the various pelvic organs as well as perhaps to

intestine and parietal peritoneum. This, along with adherent intestine he will separate and pack off with gauze pads so that the only part of the intestinal tract left in the pelvis is the rectum. He will now enucleate the pus sacs, taking care that they are completely liberated from surrounding parts before bringing them through the abdominal wound. This careful handling is necessary to prevent rupture, and with the same object he may before attempting withdrawal empty the sacs by aspiration. In this way he will in many cases be able to successfully remove the diseased parts without contaminating the peritoneum. But in some cases, in spite of these precautions, pus will escape from swellings where its presence was unsuspected or where the walls were thin.

When this happens what is to be done? Is he to consider the pus sterile and unlikely to cause serious results and simply trust to sponging, or is he to look upon the presence of even a small quantity of pus as dangerous and do all in his power to get completely rid of it. I think every wise surgeon will take the latter view and will ask himself what is the best plan to adopt. The guiding principle should be that the method followed must not spread the infection, and with this end in view he must not irrigate over a wider peritoneal area than is already contaminated. Care must be taken to prevent the water flowing up amongst the intestines and distributing the infection. To ensure this, the general abdominal cavity must be carefully shut off from the pelvic cavity, by packing thoroughly with gauze, and before any water is introduced the pelvis must be lowered. After these precautions have been taken the operator may hold the wound widely open and introduce a little water at a time, sponging it out and repeating the process until he thinks the pelvic cavity is clean. This method I do not consider safe, because one cannot be absolutely certain that some of the water will not find its way up among the intestines. A better plan is to use swabs soaked in water and mop out the pelvis with them. This is the plan I followed till recently. With it there is no fear of contaminating the general peritoneal cavity. Its fault is that it lacks thoroughness, and, in this respect, is inferior to the method which I will now describe, and which I recommend with confidence. Immediately the

pus escapes from the ruptured sac, cover it over with a large gauze pad, and pack off the general peritoneal cavity carefully and thoroughly with gauze. Remove the diseased structures. Then introduce a long pair of forceps or blunt scissors into the vagina, and push its point through the posterior fornix into the pouch of Douglas and separate the handles widely to enlarge the opening. Now lower the pelvis and irrigate the cavity from above, introducing the end of the douche into the abdominal wound. The stream of water, or normal saline solution, if you use it, washes out the pelvis and escapes through the opening at the foot of Douglas' pouch into the vagina, and out at the vulva. (See Plate I.) A speculum placed in the vagina facilitates the flow and lets a full stream through.

By this method there is no chance of the contaminating material being carried upwards into the general peritoneal cavity, and it permits of most thorough cleansing. Before adopting this plan, there was no complication during cœliotomy that I dreaded as much as the escape of pus; but now it gives me no concern, as I know how to get safely rid of it.

I have purposely avoided any reference to drainage, as there is no room for the discussion of such an important subject in this brief note.

I may now narrate two illustrative cases.

Case I.

Removal of abscess of right ovary—Excision of cyst of left ovary—Fouling of peritoneum during operation; downward irrigation through the vagina—Recovery.

Mrs S., æt. 24, married 3½ years, ii-para, youngest child 1 year old. No miscarriage.

Complaint.—Pain in the right side ever since the birth of her last child, very severe and aggravated before and during the periods.

Menstruation regular. Has had leucorrhœa since last confinement. The placenta was retained, and the patient made a slow recovery. Micturition has often been painful. Previous to marriage her general health was very good.

Physical Examination.—The uterus is displaced to the left

PLATE IV.—TO ILLUSTRATE DR BREWIS' PAPER.

by a firmly fixed swelling, which occupies the whole of the right half of the pelvis. The swelling is somewhat round in shape, and is of firm consistence.

Operation.—15th December 1899. Cœliotomy. Patient in Trendelenberg position. The omentum was found spread over and adherent to the sigmoid flexure, the left ovary, and the fundus uteri. The swelling on the right was encapsulated and firmly incorporated to surrounding parts by strong old adhesions, and it was with the greatest difficulty that it could be enucleated. During its extraction the swelling burst, and foul-smelling pus escaped. As much care as possible was taken to prevent infection of the surroundings, the pedicle was ligatured with catgut, and the abscess sac removed. The left ovary was imbedded in adhesions, was enlarged, and contained a cyst filled with gelatinous material. This cyst was excised, and the cut surfaces of the ovary stitched with fine catgut. The left tube was congested, but appeared healthy in other respects, so ovary and tube were left.

The pelvic basin was now shut off from the peritoneal cavity by gauze packing, Douglas' pouch was opened from below, the pelvis was lowered, and the cavity thoroughly flushed with sterilized water. A pack of iodoform gauze was then introduced into Douglas' pouch, and the lower end carried into the vagina. This was done to check oozing and to drain. The patient's recovery was easy and uneventful. There was no rise of temperature, except on the sixth day—the day before the packing was removed—when it reached 99°.

Case II.

Removal of pyosalpinx of right side and hydrosalpinx of left side—Fouling of peritoneum during operation; downward irrigation through the vagina—Recovery.

Mrs D., æt. 27, married nine years, has had no children or miscarriages.

Complaint.—Pain in the right side and back, and down the right leg. Menstruation is irregular, lasts from seven to twelve days. Dysmenorrhœa is very severe, especially during the first day of the period. Micturition is frequent and painful. Her general health has never been good since marriage. She

has lost flesh during the last three months. Her right leg swells when the pain in her right side is at its worst.

Operation. — 25th Jan. 1900. Cœliotomy. Patient in Trendelenberg position. The pelvic roof was found covered over by adherent omentum, which was divided and the abdominal cavity then packed off. A swelling the size of an orange lay behind the right broad ligament and uterus, and extended low down into Douglas' pouch, being firmly incorporated to pelvic wall, uterus, and pouch of Douglas. In bringing up the swelling it burst in two places, and half an ounce or more of pus escaped. The pedicle was very broad and thick, and was ligatured with catgut. The swelling was composed of tube and ovary. The left ovary was large, cystic, and adherent to bowel. Its consistence was so soft that it broke down when handled. It was removed along with the tube, which was dilated and contained serum. Considerable oozing, chiefly from the posterior surface of the uterus, was stopped by the cautery. The pelvic cavity was now thoroughly washed out as in the preceding case. A gauze pack was pulled through the vaginal opening and the pelvis tightly packed. Catgut was used throughout the operation, and the abdominal wound was closed in layers with the same material. The patient was in poor condition before the operation, and at its close was so exhausted that saline injections were made below the breast; but her recovery was uneventful, the temperature never once rising above normal.

CLINICAL NOTE ON RESIDUAL URINE IN CASES OF ENLARGED PROSTATE

By A. G. MILLER, M.D., F.R.C.S.Ed.,

Consulting Surgeon to the Royal Infirmary, and Examiner in Clinical Surgery to the Edinburgh University; President of the Medico-Chirurgical Society

I SUPPOSE that all surgeons will admit that an enlarged prostate of itself causes no harm, and often gives rise to no symptoms. Trouble and danger commence with the residual urine, which, if it increase, gives rise to retention, catheterism, and other serious consequences.

The symptoms that are generally attributed to the enlarged prostate, such as frequency of micturition and so-called incontinence, are really due to the retained urine.

The object of my paper this evening is to draw attention to this dangerous residual urine, to discuss its cause, and to suggest a simple method of treatment, in early cases, that occurred to me in connection with a case which I will relate.

For such cases, hitherto, so far as my information goes, the only treatment available has been the judicious use of the catheter—unless the prostate can be reduced in size, or the bladder stimulated by the administration of ergot—a method of treatment suggested by me some years ago, and which I have found beneficial in cases in which the prostate is soft and where there is hæmorrhage.

A few years ago a very hale and active old doctor consulted me regarding his condition, and propounded the question of the necessity for the catheter in his own case, to prevent increase of the residual urine that he had discovered to exist already to the amount of three ounces. We discussed his case thoroughly with the knowledge, on both sides, of the risks connected with catheterism—however carefully conducted. It occurred to me to say to my friend, "seeing there are these risks, why not first make a special effort to get rid of the residual urine by voluntary evacuation." I suggested that, after he had passed water in his usual manner, he should wait for a short time and then try again, and insist on the evacuation of some more urine. My old friend (he was about seventy) consented to try the plan, and to let me know how he succeeded. He returned in some weeks saying that he had already benefited considerably. He reported that at first he got rid, at the second effort, of one or two ounces of urine. After a time the quantity was reduced to one ounce, or half an ounce. At the same time he had to get up less frequently at night, and passed his water in a better and more forcible stream at all times. His last report, in a letter which I have, was, that he practised the second effort only night and morning, that the quantity evacuated was quite small—half an ounce or so—and that he was quite contented with his condition.[1]

[1] He assisted the second effort sometimes by standing at a fixed basin in his room and turning on the water-tap.

When I was talking over the doctor's condition with him the view naturally presented itself that the bladder was not emptied thoroughly because sufficient effort was not made to do so, and that a little more force applied was perhaps all that was necessary to completely empty the bladder. If the urine can flow at all it ought to be possible to empty the bladder, and if the act stops short of complete evacuation there must be some reason for this. This suggests the question—Why does an old man with an enlarged prostate not empty his bladder completely? Before answering this, however, let us consider the condition of a man with an enlarged prostate. The man being advanced in years is not so muscular as he was when younger. His muscle tone, and consequently bladder tone, are not so good as they once were. If we take it as granted that there is diminution of muscle power, added to the obstruction from the enlarged prostate, we have two important factors for the production of residual urine. It has occurred to me, however, that there is, or may be, another factor present which has not hitherto been recognised. I have thought of it under various names, such as laziness, indifference, and impatience. Perhaps it varies in different persons. Perhaps it is complex, more or less, in all.

The condition of mind or body to which I thus refer is that which makes the person stop (short of complete emptying of his bladder) whenever he has the sensation of relief, perhaps because he wants to get back to his warm bed as soon as possible, or because he wants to get out of the urinal where he has been standing with damping feet for some time. Perhaps he stops merely because he has got rid of the feeling of distention, even though he may know that he will be all the sooner obliged to pass water again.

My object is, as you will see, to point out that impatience or hurry, indifference to consequences (unknown doubtless to most), and something like disinclination to make an effort, are the causes of the failure to empty the bladder, and therefore of the presence of the residual urine. To put the matter into a single sentence—*The cause of residual urine is neglect to empty the bladder.* I admit that not infrequently the word "inability" might be substituted for "neglect" with accuracy. But I submit at the same time that even in these cases

neglect has probably begun what inability keeps going, and increases.[1]

In order that I may still further enforce this view, let me refer briefly to the way in which the bladder is emptied naturally and physiologically. There is a twofold action—first, the relaxation of the muscle or muscles which close the cavity; and, second, the contraction of the bladder itself, aided by atmospheric pressure, and sometimes by the abdominal and pelvic muscles. These muscular actions are partly voluntary and partly involuntary.

Now I submit that the whole process, though complex, partakes more of a *relaxation* than of an *effort*; of course I mean under ordinary circumstances. Is it not so? We experience a sensation of relief after passing water, and the relief is all the more pleasant that it is without exertion. In other words, we generally pass urine, after the flow is started, by the contraction of the bladder only, aided by atmospheric pressure. Apply this now to the case of the man with an enlarged prostate. He has been accustomed for sixty years or more to pass his water at will without any trouble. He has hitherto experienced relief and comfort without any exertion. Why should he exert himself now? Well, he doesn't. What is the consequence? Just what we have seen. He stops short of completely emptying his bladder, and residual urine is the result. It comes to this—it is very much a matter of habit. The man with residual urine has lapsed into a habit of not emptying his bladder. No doubt because emptying it has become more difficult. Under these circumstances I hold that the rational treatment is to break off the habit while this is possible, namely, at the beginning, and to establish instead a practice of emptying the bladder regularly.

I may be told that prostatic patients do exert themselves, and have to strain, sometimes very severely, when passing water. That is so. But these are advanced cases. The straining comes too late. The bladder has lost its power and function, and the work has to be done largely by the

[1] It must be remembered that, as I said formerly, I am not referring to old-standing and advanced cases, but to those in which the formation of residual urine is *commencing*.

abdominal muscles. What I suggest ought to prevent this condition of matters by training the bladder to empty itself, and so to keep it healthy, in good tone, and functionally active.

Sir Henry Thompson,[1] in his lectures on the surgery of the urinary organs, when speaking of atony of the bladder, says that this is most frequently caused by enlargement of the prostate, and in speaking of residual urine he says that a habit of not quite emptying the bladder may be acquired. In these statements he seems to support my view of the cause of residual urine in cases of enlarged prostate. When, however, he deals with the subject of enlarged prostate,[2] he states that hypertrophy with dilatation is the most common condition. In this latter opinion Mr Reginald Harrison coincides,[3] and he is of opinion that the residual urine is most commonly due to sacculation of the bladder, the mucous membrane being herniated between thickened bands of the muscular layer of the bladder.

This apparent contradiction is, I think, to be explained by the supposition that these latter statements refer to advanced cases of prostatic disease. On the other hand, my present argument refers to early cases—those in which residual urine is only commencing to form.

I would put my deductions as two :—

1. Residual urine is due at first to neglect to empty the bladder.

2. Accumulation is due to this becoming a habit.

The practical application is that men advanced in years who are beginning to have prostatic symptoms should make a point of emptying their bladder thoroughly.

My advice is: after passing water in the usual way, wait a minute or two and then try again. Practise this as frequently as possible, till only a very small quantity can be squeezed out (ʒ i). When that point has been reached, twice or thrice daily may suffice. How does this act? In two ways. First, the small residuum of urine that may result from a careless act of micturition is got rid of. In the second place, the bladder tone is improved, and its function restored. One might add

[1] "Surgery of the Urinary Organs," 1884, p. 99.
[2] "Diseases of the Prostate," 1886, p. 108.
[3] *Lancet*, 5th May 1900.

that the habit of completely emptying the bladder is acquired. A still more important result is that the residual urine being diminished cannot possibly increase. *Obsta principiis* is a good working principle.

I do not bring this forward as a cure, or as a means of preventing residual urine from forming in every case of enlarged prostate. I merely suggest a safe and simple procedure, which has apparently checked the increase of residual urine in several cases, and which may in some others at least postpone the almost inevitable catheter.

SOME OBSERVATIONS UPON THE GENERAL BLOOD PRESSURE IN SLEEPLESSNESS AND SLEEP

By LEWIS C. BRUCE, M.D.,
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THE following observations made upon the general blood pressure in states of sleeplessness and sleep were made upon inmates of Murthly Asylum.

The observations made during conditions of sleeplessness were of necessity made upon patients who were suffering from acute mental disease, but I have only recorded cases in whom sleeplessness was an outstanding symptom and not just an accidental occurrence. The observations upon sleep were all obtained from convalescent patients who were sleeping well.

The instrument used was Barnard & Hill's sphygmometer, and I take for granted that Hill's statement that "the normal general arterial pressure in the horizontal posture equals about 110 mm. Hg." is correct.

The first points upon which I desired to obtain information were :—

1. Are there any unusual conditions of blood pressure which are associated with sleeplessness in mental disease?

2. What changes occur in the blood pressure when sleep is induced in these cases by drugs?

In all, sixteen acute, recently admitted, cases of mental disease with sleeplessness as a marked symptom gave reliable results.

The blood pressure in twelve of these cases with sleeplessness ranged from 130 to 150 mm. Hg., and in the remaining four cases the blood pressures ranged from 110 to 100 mm. Hg.

The cases, therefore, seemed to range themselves under two classes :—

1. Sleeplessness with high blood pressure.
2. Sleeplessness with normal or low blood pressure.

The drugs used to induce sleep in these patients were : paraldehyde, sulphonal, trional, and potassium bromide.

Effect of Paraldehyde ℥ii in sleeplessness with
High Bl.d Pressure **Low Bl.d Pressure**

CHART No. 1. CHART No. 2.

Chart No. 1 shows the effect of paraldehyde in ℥ii doses upon a blood pressure of 150 mm. Hg. with sleeplessness. At 12 midnight the patient was sleepless, and the blood pressure stood at 150 mm. Hg. Paraldehyde ℥ii was administered. At 12 15 A.M., *i.e.* fifteen minutes later, the patient was asleep, and the blood pressure had fallen to 110 mm. Hg.

Chart No. 2.—Shows the effect of paraldehyde in ℥ii doses upon a blood pressure of 105 mm. Hg. with sleeplessness. At 12 midnight the patient was sleepless, with a blood pressure of 105 mm. Hg. Paraldehyde ℥ii was administered. Almost immediately the patient became talkative, restless, and at 12·30 A.M., half an hour later was still restless. The tension had risen to 120 mm. Hg., and the patient did not sleep until three hours later.

Paraldehyde given in large doses of ℥ii always induced sleep in class 1—sleeplessness with high blood pressure. Sleep followed as a rule within fifteen minutes after the administration of the drug, and the blood pressure fell either to 110 mm. Hg. or below 110 mm. Hg. (see Chart 1).

In class No. 2—sleeplessness with low blood pressure—paraldehyde in ʒii doses invariably failed to induce satisfactory sleep.

In these cases immediately after the administration of the drug the patients became restless, their blood pressures rose, and they either failed to sleep, or if sleep did ultimately set in, it was of a restless, muttering, unrefreshing character (see Chart No. 2). I ultimately found that in these same patients small doses of paraldehyde—15 to 30 mins. — generally induced sleep rapidly.

I class sulphonal and trional together, as they gave very similar results —with the difference that trional acted more rapidly than the sulphonal, and was less reliable in cases of sleeplessness with high blood pressure.

CHART No. 3. CHART No. 4.

Chart No. 3.—Shows the effect of sulphonal gr. 30 on a case of sleeplessness with a blood pressure of 135 mm. Hg. When sleep set in the blood pressure fell to 105 mm. Hg.

Chart No. 4.—Shows the effect of trional gr. 20 on a case of sleeplessness with a blood pressure of 105 mm. Hg. In fifteen minutes after the drug was administered the patient was asleep, and the blood pressure was 100 mm. Hg.

In class No. 1—sleeplessness with high blood pressure—they were not nearly such certain sleep producers as paraldehyde, and the resulting sleep did not seem to be so refreshing. When sleep did set in, however, the blood pressure always fell to 110 mm. Hg. or lower, and, upon the other hand, they never failed to produce sleep in class 2—sleeplessness with low blood pressure (see Charts 3 and 4).

I obtained no satisfactory readings with potassium bromide.

It would appear, then, that in the majority of cases of sleeplessness in mental disease the sleeplessness is associated with a high blood pressure, and that the most certain hypnotic is paraldehyde given in large doses of at least ʒii, and it is also certain that when sleep is induced in these cases by

paraldehyde, or any other drug, that the blood pressure falls to 110 mm. Hg. or below 110 mm. Hg.

There also appear to be a certain proportion of cases of sleeplessness with low blood pressure—of 110 or below 110 mm. Hg. This class is, I believe, best treated by sulphonal or trional, or small doses of paraldehyde. When sleep ensues in these cases as the result of drugs, the blood pressure does not necessarily undergo much change (see Chart 4).

As all the cases of sleeplessness with high blood pressure, when they slept under the influence of drugs, showed a fall in blood pressure, I determined to try the effect of using, as a hypnotic in these cases, a drug which had no other action than reducing blood pressure. Such a drug is erythrol tetra-nitrate. Up to the present I have applied this drug in nine cases of sleeplessness with high blood pressure. Of these nine cases, three were immediately and permanently benefited; three were temporarily improved for two or three nights, and then the drug appeared to lose its effect, their blood pressures rose, and sleeplessness again became a troublesome symptom. In the remaining three cases the drug had absolutely no effect. The patients upon whom the drug had no effect were two cases of acute mania and one case of senility. In all these cases ½ gr. of erythrol tetra-nitrate was administered night and morning. If the blood pressure was not reduced the dose was increased gradually to 2 grs. per diem, and if this amount failed to reduce the blood pressure and induce sleep, treatment was discontinued.

In my experience, erythrol tetra-nitrate is a drug that will act at once if it is going to act at all, and our three successful cases have so impressed me that I intend to give erythrol tetra-nitrate a trial as the first hypnotic in every case of sleeplessness associated with high blood pressure (see Charts 8A and 13).

In states of over-fatigue, especially mental over-fatigue, the blood appears always to be run at high pressure, and sleeplessness is one of the first symptoms, if not the first symptom, which indicates that there is going to be a nervous breakdown. In many such early cases I believe erythrol tetra-nitrate might be found useful in producing sleep by reducing blood pressure.

I have used erythrol tetra-nitrate extensively in various

conditions of raised arterial pressure, and have never found it give rise to unpleasant symptoms, except in two patients who suffered from bad headache after taking ½ gr. doses of the drug. It is, however, said to be a dangerous drug, in that it is an explosive of a violent nature.[1]

The second series of observations were made upon con-

CHART No. 8A. CHART No. 13.

Chart No. 8A.—Shows the effect of 1 gr. of erythrol tetra-nitrate per diem upon a patient who was suffering from melancholia with sleeplessness and a high blood pressure. Up to the 15th of January this patient had not slept for fourteen days for more than an hour at a time. From the 15th January onwards she slept soundly and recovered rapidly.

Chart No. 13.—Shows the effect of erythrol tetra-nitrate gr. ½ as a sleep producer. This patient, also a case of melancholia, had not slept for two nights. At 11.30 P.M. erythrol tetra-nitrate gr ½ was administered. In less than an hour she was asleep, and at 1 A.M. the pressure had fallen to 115 mm. Hg.

valescent patients in order to throw some light upon the following questions:—

1. Is sleep possible with blood pressures of 130 mm. Hg. or higher?

2. What relation does the morning blood pressure bear to the evening pressure when a person is sleeping well?

3. Are there any differences in the blood pressure of the same person asleep under the action of drugs and sleeping naturally?

[1] With the assistance of my colleague, Dr Alexander, I have tried to explode erythrol-tetra-nitrate by detonation. We failed to produce any explosion, and we are of the opinion that erythrol-tetra-nitrate as supplied in tabloids cannot be an easily exploded form of the drug.

(1) Is sleep possible with high blood pressure?

Among some thirty records of blood pressures taken from sleeping patients, I have two charts of natural sleep which show pressures of 130 mm. Hg. and 140 mm. Hg. during sleep. The explanation is, I believe, as follows:—Both these patients had just passed into the condition of sleep when the record was taken, for on taking the pressure again an hour later in the sleeper whose blood pressure had been 140 mm. Hg., I found that it had now fallen to 105 mm. Hg. This would seem to indicate that the fall of blood pressure was the result of, and not the cause of, natural sleep (see Chart 1B).

Natural Sleep.

There would appear then to be certain cases of sleeplessness in whom a high blood pressure was directly the cause of sleeplessness, and in these cases sleep can be induced by artificially lowering the blood pressure.

There appear also to be cases in which high blood pressure during the waking hours does not necessarily mean sleeplessness, but, as far as my observations go, the blood pressure in these cases always falls after sleep has been established.

CHART 1B.

Chart 1b.—Shows a convalescent patient with a high blood pressure, whose blood pressure upon first falling to sleep at 11 P.M. was 140 mm. Hg., but an hour later was 105 mm. Hg.

(2) What relation does the morning blood pressure bear to the evening blood pressure?

During the period of convalescence when sleep has returned the sphygmometer shows that the blood pressure as a rule is lower in the evening than in the morning. But it does not follow that because the evening blood pressure does not fall the patient will not sleep. Chart No. 1B shows a convalescent patient whose morning and evening blood pressures registered each 140 mm. Hg., and yet whose blood pressure when asleep at 12 A.M. the following morning was 105 mm. Hg.

When a convalescent patient is relapsing and again tending

to become sleepless, the evening blood pressure is generally higher than that of the morning. Chart No. 8B shows a convalescent patient who slept well from the 28th of January to

CHART 8B.

the 3rd of February, during which period her blood pressure was never higher in the evening than it was in the morning. On the 4th and 5th of February the evening pressure was higher than the morning pressure, and on neither night did she sleep well. Chart No. 13A is another example of a relapsing patient with a higher blood pressure.

To both these rules there are certainly exceptions, probably due to the fact that the blood pressure is a very unstable quantity constantly changing under very slight provocation.

(3) Are there any differences in the blood pressure of the same person asleep under the action of drugs and sleeping naturally?

CHART 13A.

The only drug experimented with has been paraldehyde.

The sphygmometer readings show that the arterial pressure in any individual person asleep under the influence of paraldehyde sinks lower by about 10 mm. Hg. than it does when

that person is sleeping naturally, and the pulsations of the needle are markedly affected by the respiration in a person sleeping from the effects of paraldehyde, the pressure being increased during inspiration and reduced upon expiration. Chart 6B shows two records of arterial blood pressure during sleep from the same individual. The first record is that of natural sleep when the arterial blood pressure during sleep never fell below 100 mm. Hg.

The second record is paraldehyde sleep, and the pressure fell gradually to 90 mm. Hg.

Chart No. 7B holds a more extended record of arterial pressure in paraldehyde sleep in a patient whose arterial blood pressure was taken during natural sleep upon four different occasions, and upon each occasion was found to equal 100 mm. Hg. Under the influence of paraldehyde, however, the arterial blood pressure fell to 85 mm. Hg. at its lowest, and, as the effects of the drug passed away, the blood pressure gradually rose. At 4.30 P.M. the patient was accidentally wakened when the sphygmometer reading was being taken, and the blood pressure rose to 105 mm. Hg., but shortly afterwards the patient slept again, and then apparently passed into a condition of natural sleep with a pressure of 100 mm. Hg.

CHART 6B.

Chart 6b.—Record i. shows the fall in blood pressure during natural sleep. Record ii. shows the fall in blood pressure as the result of paraldehyde drug sleep. It will be noticed that the pressure under the influence of paraldehyde has fallen 10 mm. Hg. lower than in natural sleep. These records were both taken from the same patient, who was recovered.

The result of these latter observations is as follows :—

1. Sleep is possible with high blood pressure, but the pressure always falls after sleep is established.

2. That the general blood pressure is as a rule higher in

the morning than in the evening in a state of health, and the reverse of this holds good in some sleepless conditions.

3. That in the drug sleep induced by paraldehyde the blood pressure falls at its lowest about 10 mm. Hg. below the

CHART 7B.

Chart 7b.—Shows sleep induced by paraldehyde in a semi-convalescent patient. Paraldehyde ℥i was given at 11.30 A.M. At 12 mid-day the blood pressure had fallen from 105 to 95 mm. Hg.; at 12 30 P.M. the blood pressure was 85 mm. Hg.; at 2.30 P.M. the pressure had again risen to 95 mm. Hg.; at 4.30 the patient awoke and the pressure rose to 105 mm. Hg. Ten minutes later the patient was asleep again, and at 6.30 P.M. the blood pressure was 100 mm. Hg. This was the blood pressure habitual to this patient when sleeping naturally.

natural blood pressure of the same person when sleeping naturally, and that as the effect of the drug passes off the blood pressure rises again and eventually passes to the blood pressure habitual to that person in natural sleep; that, in short, drug sleep does pass in some cases into natural sleep.

NOTES FROM THE EDINBURGH HOSPITAL IN SOUTH AFRICA

By FRANCIS D. BOYD, M.D., F.R.C.P.Ed.,
Physician to the Hospital; Assistant Physician to the Royal Infirmary, Edinburgh, etc., etc.

IT may interest the readers of the Journal to hear of the work and experiences of the Edinburgh Hospital and Staff since they were given their location and field of work at Norval's Pont.

The staff and orderlies arrived without the hospital, for, at the last moment, the railway authorities found themselves unable to forward the baggage along with the personnel. On arrival, at 1 A.M., the staff got their first experience of campaigning, for they were shown a portion of the veldt, and told it was their camp. As the tents were at Port Elizabeth, all that could be done was to curl up in coats and rugs and try to think that in every new experience pleasure was to be found; but the veldt was so hard and one was so conscious of the presence of a great trochanter that sleep was by no means easy. Next day, in borrowed tents and doing our cooking in old "bully-beef" tins, life was begun at Norval's Pont.

Norval's Pont is, as compared with the country between it and Port Elizabeth, a beautiful place. There is the Orange river with its belt of trees, and the hills around have a certain grandeur and in the evening sun take on a purple glow which reminds one of Scotland. A site for the hospital had been marked out in the camp, but it appeared in many ways undesirable. So after some prospecting a point was chosen, on virgin soil near the railway line and away from the camp, on higher ground than the camp and with the prevailing winds blowing from the open veldt. Here the lines were marked out, and as the baggage arrived it was unloaded and things put together and at last the buildings may be said to be complete.

The hospital consists of an administrative block and four pavilions, with storehouses, laboratory, and various annexes. All the buildings are roofed and walled with corrugated iron. The floor of the wards is of matchboarding, the walls are lined with green canvas and with a white canvas roof, the general æsthetic effect is very pleasing. Both in the sunlight and in the electric light at night it would be difficult to picture a more comfortable and pleasant sickroom.

The actual in-patient work of the hospital did not begin till May 29th, when the first train of sick came in, but before this a large amount of work had been done by the staff in the Norval's Pont camp. It may be asked, why this delay? The delay was due to no slackness on the part of the personnel or of the military authorities who gave every help in erection, but entirely to the enormous amount of labour necessary to complete the buildings, for these were not in sections, and a great deal of carpentery work was necessary. The result, now that the buildings are up, is all that could be desired, but the waiting while the erection was proceeding was wearisome.

Since May 29th the work of the hospital has been actively carried on. It has been mostly medical, a large proportion of the cases being enteric fever. Some of the cases

when received were very ill, for before reaching the hospital train they had been for two or more days in open trucks or bullock wagons. The type of enteric fever differs a good deal from that seen at home. In a large proportion of the cases the first symptoms are intense occipital headache, pains in the limbs, and constipation. In some cases the temperature rises rapidly after an initial rigor. The "typhoid state" is by no means common; it has only been present so far in about three per cent. of our cases.

One marked characteristic of most of the cases is the intensely foul condition of the mouth, and this is present even when the greatest care has been taken to guard against it by douching and antiseptic applications from the beginning of the disease. The dryness of the climate seems to increase the difficulty, and from the earliest day of the disease mouth-dryness is a marked symptom. In all the cases diarrhœa has been conspicuous by its absence, constipation being the rule. Of complications a number have been noted. Pleural effusion has occurred in about three per cent. of the cases, fatal hæmorrhage in one case, thrombosis of the veins of the extremities in four cases. Perforation has twice been found. The first patient perforated while in hospital. He was then very ill, with marked hypostatic congestion of the lungs and a dilated right heart. The abdomen was opened within a few hours of perforation, and before noticeable peritonitis was present, but unfortunately the patient died within twenty-four hours. The second case when admitted was found to have perforated twenty-four hours before admission. As general peritonitis was present and the pulse was exceedingly weak, it was not considered advisable to operate. The patient died in a few hours.

The case showed a very interesting complication, viz., thrombosis of the branches of the left middle cerebral artery, beyond the branches of supply to the internal capsule, resulting in aphasia with hemiplegia.

Has inoculation had any effect in modifying the disease? The question is a little difficult to answer. That there is in this epidemic an abortive type of enteric fever there can be no doubt. A considerable number of enterics are sent down as so-called "simple continued fever." The patient has been ill for a few days with fever, headache, and constipation. On admission, the temperature may be found normal in the morning, and for a day or two it may rise a degree or so at night. The whole course of the fever may last a week or even under a week. Some cases admitted convalescent developed fever for a few days while in hospital. In most of these cases the spleen was enlarged and the blood gave a positive reaction

when examined by Widal's method. In the cases which developed a feverish attack while in hospital a rash was frequently present. There can be no doubt that most of the cases of "simple continued fever" were really mild or abortive enteric fever. Is there such a disease as "simple continued fever"? Most medical men who have had experience in tropical or sub-tropical climates assure one that there is a definite Febricula which is met with, in hot climates, in white people who have undergone fatigue and exposure to the sun. Undoubtedly most cases, if reliance can be placed on Widal's reaction, are cases of mild enteric fever, but some of the cases did not give a positive reaction and showed no tendency to relapse, and might fairly be placed under the category of "simple continued fever." Now, in those cases of apparently abortive enteric some had been inoculated and some had not. Again, some of the most severe cases occurred in patients who had been inoculated and in some there were complications, but then might not those patients have been still worse had they not been inoculated? It is difficult, indeed impossible, at present to form any definite conclusion. One of the most interesting modified or abortive cases occurred amongst the staff. The sufferer had an undoubted attack with gastro-intestinal symptoms, a rash, splenic enlargement, and a positive Widal reaction, and yet, though the patient was ill and lost two stones in weight, there was never any discoverable fever, though a regular chart was kept throughout the attack.

Amongst the other medical cases dysentery has taken a leading place. As seen here it has been mostly of the catarrhal form, but some of the cases have shown all the characteristics of severe ulceration.

Of actual surgical work there has been but little. A hæmorrhagic effusion into the knee occurring along with enteric fever, a hæmorrhagic pleural effusion following on a bullet wound, and a convalescent patient after bullet wound of the abdomen, are amongst the most interesting cases. In the latter case the bullet had entered an inch below the costal margin and an inch to the right of the middle line, passed downwards and outwards, and emerged at a point an inch above the middle point of the iliac crest. In its passage it must apparently have injured the ascending colon. While in hospital the patient indulged in extra muscular exertion which produced an attack closely simulating retro-cæcal appendicitis. There was a rise of temperature, intense pain and tenderness in the right iliac fossa and inability to extend the leg, but no tumour. Under rest and an opiate the symptoms passed away in forty-eight hours.

The experience of the Edinburgh Hospital so far in the campaign has been of sickness not of wounds. To the thinking man the question naturally arises—In a campaign like this is so much sickness a necessity, or is it avoidable in whole or in part?

It is instructive to glance at the experience of the staff of the Hospital in discussing such a question. Every precaution was taken that was possible. All milk and water was boiled, and as far as possible every care was taken to prevent food contamination. Norval's Pont is said under ordinary circumstances to be one of the healthiest spots in South Africa, and yet at present it has the ugly reputation of originating the most virulent type of enteric fever met with in South Africa. The climate of the place may be said to be ideal during the day, the most perfect sunshine and not unbearably warm; the nights are cool, and now that we are in mid-winter, frosty and at times intensely cold. It should be healthy, and yet what has been the experience of the staff of the Hospital living under exceptionally hygienic circumstances, as campaigning goes?

Out of a personnel of sixty-one, the Chief of the Staff, one assistant-surgeon, one dresser, one sister, one maid, and four orderlies have had or have enteric fever; one dresser and six orderlies have had severe dysentery, while there have been innumerable attacks of minor gastro-intestinal derangement.

To what can this be ascribed? The camp at Norval's Pont was originally a Boer and is now a British camp, and at the time the Hospital was first located here its sanitary condition left much to be desired. In any spot where insufficient sanitary precautions are taken there are, if water be excluded—and in our case we can exclude water—two great media by which infection is spread, flies and dust. Flies were, indeed, during the warmer weather, a perfect scourge, and it is a very difficult problem to protect food from their inroads. It may be said, surely food can be covered, and so it may in a well-equipped house, but in a camp it is a practical difficulty which is not easily overcome, and it is very difficult to persuade the ordinary soldier servant how dangerous flies are. Even when food is on its way to the mouth the flies will attack it in transit. They come straight from the latrine which has been used by an undiagnosed case of enteric or from infected gutters and ditches, and with their feet thus infected it is not difficult to see how typhoid spreads.

Again, the dust storms. What more fruitful mode of spreading infection could be imagined. Any one who has lived in a tent in this country knows the difficulty of excluding dust. It is in fact impossible, even in well-built huts. The dust blows from the neglected latrine and from the dried-up

ditches, and food becomes contaminated as it is placed upon the table. In this campaign there is a very definite tract by which infection can be carried—the railway line. Sick and convalescents have to be carried over many miles of rail, and unless they are taken in hospital trains the railway line is bound to be infected. It stands to reason that the ordinary sanitary arrangements of the stations are quite inadequate to meet the demand upon their resources. Insufficient control then leads to the contamination of a camp.

One cannot help concluding that while sickness is unfortunately a sad accompaniment of any campaign in a country where enteric is endemic, it is not a necessity. We must aim at increased sanitation in camps, increased facilities for transferring the sick in trains; then sanitary measures can be carried out. One can quite recognise that while on campaign military necessity must take precedence of hygiene, but this is not essential in a standing camp. And with a more thorough recognition of the necessity for perfect sanitation, much unnecessary sickness could be avoided.

Public Health

QUINQUENNIAL HEALTH REPORT OF THE BURGH OF LEITH

THE Quinquennial Report of the Burgh of Leith has just been issued, and reflects the highest credit on the capacity, industry, and thoroughness of the Burgh Medical Officer of Health, Dr Leslie Mackenzie.

We must refer our readers to the Report itself for many interesting statistical tables. We have been specially impressed with the charts showing graphically the incidence of the principal infective diseases during the period dealt with. One of these shows in a very striking way the reduction in the cases of scarlet fever since the Medical Officer took the dealing with infection into his own hands, and since the opening of the infectious diseases hospital. If a similar record can be obtained during the next few years, Dr Leslie Mackenzie will have demonstrated, probably as no other Medical Officer has done, how effective preventive measures can be when applied with skill, thoroughness, and close personal supervision.

The Report contains chapters on tuberculosis, disinfection, and the inspection of meat and milk. With Dr Leslie Mac-

kenzie's permission, we give to our readers, in extended form, some of these chapters. They will be found full of useful and practical detail.

Dr Leslie Mackenzie on Disinfection.

I. THE SPECIAL PROBLEM.—Where practices, and presumably theories, differ on the method of disinfection, is in certain special methods applied to certain special conditions. What are the conditions in question? Before answering, I shall enumerate certain points, concerning which there is no serious disagreement.

1. Steam disinfection is the most efficient for the disinfection of mattresses, palliasses, feather beds, carpets, and all heavy articles that are not too greatly damaged by steam.

2. Saturated steam under pressure is the most rapidly effective method of applying steam.

3. Current steam is efficient, but in the machines as yet available for heavy disinfections it is not easily applied.

4. For blankets and woollen articles generally, the simplest method is steeping in a known disinfectant and subsequent washing or rinsing in hot water. Steam in any variety is too apt to fix stains and to yellow the goods.

5. For articles of clothing (like tweeds) that are not too much shrunken by passage through steam, steam disinfection is simplest.

6. For all linen and cotton articles, the simplest method is steeping in a disinfectant and washing.

7. For all utensils and washable furniture, the simplest method is washing of surfaces with suitable disinfectants—non-corrosive for metal or polished articles, corrosive or non-corrosive for others.

8. For floors and all washable fittings, the same method of washing with suitable disinfectants is simple, and so falls in with ordinary household habits as to be safely relied on for execution.

9. For skins, furs, fur rugs, books, papers, pictures, silks, delicate bric-à-brac, and many articles not, as a rule, plentiful in the majority of houses requiring disinfection, some other method than washing must be found.

10. The disinfection of the air in rooms is an affair of no practical account, since in most houses the foul air can be cleared out in a few minutes. To waste time in disinfecting air, which, so far, has not been monopolised by any class, is, except for the special ends of special experiments, to play at disinfection.

11. There is, I take it, no serious disagreement about the

methods of disinfecting sinks, water-closets, cesspools, latrines; but here there is room for much variation in practice, and the method chosen will, to some extent, depend on our choice of a disinfectant.

12. There remain the walls of infected rooms. On this point there is a general wavering of opinion, which is reflected in unqualified differences of practice. The purpose of this discussion is to assist us in bringing our practices into line with scientific opinion. While, therefore, several of the matters enumerated offer room for differences of detail in practice, the only matter where practical methods so far diverge as to throw doubt on the efficiency of some of them is the disinfection of walls of infected rooms. Our problem, therefore, is: What is the simplest, quickest, and cheapest method of disinfecting the walls of infected rooms? A subsidiary problem is: How to disinfect papers, furs, and such other delicate articles as I have named.

II. ASSUMPTIONS.—In so stating the case, I have made certain assumptions. These are problems of detail.

1. I assume that a room where any case of small-pox, typhus, measles, chicken-pox, influenza, and other such rapid infections, remains for any period from a few minutes to a few weeks, may retain infective elements on the walls.

2. I assume, however, that the liability so to retain infection varies directly with the time of exposure.

3. As a consequence, to make such a room safe it is essential to disinfect the walls.

4. I assume that a room where a case of scarlet fever, diphtheria, or phthisis has been nursed for periods varying from days to months, is liable to retain infection; but the risk of infection of walls is not equal in all. In scarlet fever the risk of wall-infection is small if the case has been removed within forty-eight hours of invasion; the risk is greater the longer the patient remains. This is not to foreclose the question of the infectivity or non-infectivity of the skin. Then diphtheria, properly nursed, is not very liable to infect walls; but the capacity of the Klebs-Löffler bacillus to live in dust for periods varying from 40 to 100 days makes it essential to disinfect the walls, if the room is to be certified free of infection. As to phthisis, the risk of wall-infection is small, if the case is well housed and well nursed; where it is neither, the risk is sufficient to justify very detailed disinfection.

5. I assume that the other principal infections—enteric fever, puerperal fever, septicæmia, erysipelas, and the like—are not very liable to infect walls. But this leaves us small-pox, typhus,

measles, chicken-pox, influenza, scarlet fever, diphtheria, phthisis, and a few others.

6. I assume that the retention of infection by the walls is a practical danger. The evidence I have been able to find that infected walls by themselves alone have actually given rise to fresh cases is very feeble; but I am not prepared to take the responsibility of declaring that such infection as walls may retain is of little importance. We must assume that all the parts of the room—floor, walls, ceiling, fittings, and furniture—are possible sources of fresh outbreaks. In the more violent infections, like small-pox and typhus, there cannot be a reasonable doubt of the danger from walls. Where the walls are foul the danger is all the greater. In the other infections the danger may be less, but it cannot be neglected. No medical practitioner would risk the placing of scarlet fever cases in a ward recently saturated with measles; nor would he risk a measles case in a recently-occupied scarlet fever ward. It would not be legitimate practice to place an enteric patient in an undisinfected typhus ward, or a diphtheria case in an undisinfected scarlet fever ward, or a healthy patient in an undisinfected small-pox ward, or, generally, any case of one major infection in an undisinfected ward recently occupied by a case of another major infection. Let us except enteric, erysipelas, and one or two other infections less readily conveyed by air. If it is not legitimate practice in hospital wards, where ventilation is good and cleansing frequent, still less legitimate is it in crowded rooms, where ventilation is bad, and cleansing a pious aspiration. I lay stress on the point because sometimes the non-occurrence of infection is taken as a final test of the efficiency of disinfection, if the room has been, say, "fumigated," and, on the other hand, as a proof of the non-necessity of disinfection, if the room has been left undealt with. Of course, the value of the result depends, first, on the nature of the infection; second, on the probability of its retention; thirdly, on the nature of the exposure subsequently incurred by any particular patient; and, fourthly, on the degree of susceptibility. In a matter where direct demonstration of infection is so difficult, we must take a wide survey of facts, and a particular negative result following non-disinfection cannot fairly be set against the fact that, by one mechanism or another, walls being one, many infections continue to spread. It is, for instance, asserted by Dr Martin, Medical Officer of Health for Paris, that house epidemics have fallen in number since the present method of spraying walls and furniture and carpets with corrosive sublimate has been substituted for fumigation by sulphur. The facts are probably numerous enough to justify the conclusion.

One further assumption I have made. It is not a matter of indifference that the method shall be simple, rapid, and cheap. By simple, I mean easy of application by the disinfectors, and as free as possible from annoyance to the inmates of the house. By rapid, I mean rapid enough to enable the local authority to overtake its duties. In many places time is no object, either to the operators or to the inmates; but in towns rapidity is essential; otherwise work is left undone, or left to the hands of the unskilled. The most rapid method, therefore, is, other things equal, the most efficient on the whole. This one qualification rules out, for routine practice, the rubbing down of walls with bread, the stripping of wall-papers, and all such processes as involve a day's labour of, say, two or three men. Doubtless, in certain cases rapidity is of no moment; but for routine disinfection after our most familiar infections, I consider rapidity of execution essential to good administration. By cheap, I mean cheap enough to justify a Local Authority in bearing the expense of every disinfection required. These three qualities are almost too obvious to need detailed justification, yet they are all factors that ought to be estimated in fixing on any method.

III. THE MOST SUITABLE DISINFECTANTS.—To be suitable for the disinfection of rooms, including floors, walls, ceilings, doors, windows, presses, recesses, pantries, papered walls, sized walls, painted walls, immovable furniture—as fixed beds, chests, wardrobes, &c.—a disinfectant must be efficient; it must not destroy or corrode the surfaces to be disinfected, unless these are of no importance; and it must not bleach fabrics. Few disinfectants fulfil these conditions. But some are so exceptionally powerful that certain drawbacks must be accepted as the price for efficiency. Of many available, I name only the following, for they are well known and well tested: sulphurous acid, corrosive sublimate, chloride with hypochlorite of lime, lysol, carbolic acid with common salt, formaldehyde in gas or in solution.

Before dealing with these and the methods of applying them, I should like to dispose definitely of the proposal to use light and air as disinfectants.

(*a*) *Light and Air.*—In the tenth report of the State Board of Health of the State of Maine (1898), all the leading results of all the leading disinfectants have been admirably compiled by Dr A. G. Young, Secretary of the Board. The authorities summarised leave no doubt that light, when allowed to act, is a powerful germicide. Sunlight is the most powerful; diffused daylight has a distinct effect; and electric light, though less

powerful than sunlight, is still not without effect if continuously applied. "Anthrax spores were destroyed in a few hours by the action of sunlight."[1] But Momont[2] found non-sporing anthrax bacilli "in dried blood resisted the action of sunlight and air eight hours. . . . Anthrax spores resist the action of sun and air more than one hundred hours when dry." Geisler[3] records Janowski's observation that "typhoid bacilli exposed to direct sunshine were nearly all destroyed in from six to ten hours." In cholera the results vary. Palermo found that three or four hours' exposure to the sun "sufficed to deprive the germs of virulence when tested on guinea-pigs."[4] Tuberculosis exposed to air and light loses its virulence entirely in from a few minutes to several hours.[5] With other organisms somewhat similar results are recorded. But the obvious criticism of any particular method based on these laboratory results is, that sunlight is beyond our control; that in none of our houses can sunlight be applied continuously to any one part for more than a very short period; that in our towns hundreds of thousands of rooms are never penetrated by sunlight at all; that even where sunlight can be used, it cannot be relied upon for the interior of rooms; that, in short, while sunlight is in every way excellent where and when it is available, it cannot be made the basis of a method for disinfecting rooms. For furniture it is more readily available, and should not be forgotten. Electric light might be made available. It could be shone into every crevice; it might be developed into a practical method; but the expense would be, at present prices, prohibitive, and the results no better than with much cheaper applications. Until, therefore, our houses and our towns are so constructed as to make it possible to flood them with light as with air, we may definitely say that light and air are not efficient substitutes for active disinfection by other means. No surgeon would rely upon either air or light, and I do not know any good ground for encouraging the belief that, however potent in the purification of water or infected surfaces exposed to them, light and air, in the qualities and quantities available in our over-lived-in, infinitely dusty, perpetually-refouled houses, can be relied upon to kill more than a minute fraction of the household germs. In the absence of all other methods, light and air, with much time and trouble, might be made efficient; but simplicity would not be a feature of a disinfection so conducted, and for routine work

[1] Marshall Ward, *Centr. für Bak.*, xiii. 568, 1893.
[2] *Annales de l'Inst. Past.*, vi. 21, 1892.
[3] *Centr. für Bak.*, xi. 161, 1892.
[4] Maine Report, p. 291.
[5] Koch, Ransome, Delépine, *ibid.*, p. 292.

the method would have to be ruled out as too laborious in practice. But, apart from practicability, a sunlight method in a climate where sunlight may be available only for an hour a week hardly admits of serious discussion.

(*b*) *Air.*—Above I have coupled light and air. Flushing a room with fresh air is always a proper thing to do, and the disinfective results are probably great; but the fact that certain germs normally live in air, and certain others persist for periods varying from hours to months, negatives the proposal to be content simply with disinfection by ventilation. The dust of any inhabited room will be found more or less germ-laden, whether ventilation be continuous or not. I have not found any evidence sufficiently strong to justify the assertion that a room infected with, say, scarlet fever, or diphtheria, or tubercle, or small-pox, is adequately disinfected by exposure to fresh air for a period that is reasonably within possible practice. Air and light are excellent artillery, but they do not render the fighting line superfluous. To leave them to do the work is, practically, to leave the battle to chance.

(*c*) *Sulphurous Acid.*—This brings us to our chief point in dispute: Shall we continue sulphur or discard it? So ancient and well established a custom as fumigation by sulphur-burning is likely to find some justification at the hands of science. And it does. In Dr Robert Angus Smith's book on "Disinfectants and Disinfection," sulphurous acid gets a high place. Its capacity to prevent or hinder putrefaction is maintained. But the book was written thirty years ago, when exact bacteriological tests were not possible. In N. de la Croix's table, reproduced in Dr Lauder Brunton's "Materia Medica,"[1] sulphurous acid, as a destroyer of developed bacteria, comes fifth in the list—that is, after chlorine, corrosive sublimate, chlorinated lime, and bromine. The strength indicated for germicidal purposes is 1 to 2009. But 1 to 190 is required "to prevent the reproduction of developed bacteria," as against 1 to 1250 for corrosive sublimate, 1 to 431 for chlorine, 1 to 336 for bromine. No details are given of the organisms employed, and, in the light of subsequent researches by other observers, these figures must be taken as the high-water mark of sulphurous acid in solution when applied to putrefactive bacteria. The results seem to be somewhat inconstant. As summarised by Dr Rideal,[2] Vallin "found it perfect"; Arnold found 10 per cent. "an uncertain means of destroying spores"; Miquel "could not kill germs in twenty days"; Dujardin-Beaumetz "found that 20 grammes of sulphur, as used in the official French fumigation, did not kill

[1] Third Edition, p. 91.
[2] "Disinfection and Disinfectants," First Edition, p. 95.

B. anthracis, though it sterilised tubes of vaccine"; Koch found both sulphurous anhydride (the dry gas) and sulphurous acid (when sprayed) insufficient to kill spores. ("Sterilised tubes of vaccine" I understand to mean that the vaccine lost its capacity to produce a vaccination vesicle.) Other names are given. In the Maine Report already quoted, Dr Young gives some more precise details of Koch's work. Koch found: "In a practically gas-tight casket 1 per cent. by volume of sulphur dioxide will kill dry anthrax bacilli in twenty minutes when on threads and exposed to the direct influence of the gas, and that under the same conditions the bacilli are destroyed in two minutes when the threads are damp. Anthrax spores, however, were wholly uninjured by a four days' exposure to 6 per cent. of the gas. When dried cultures of sporeless bacteria, not more than from one-tenth to one-half millimetre thick, were exposed in a room fifty hours to sulphur dioxide, none were killed. One hour after the sulphur was lighted the percentage of sulphur in the air was about 3; one hour later it was only 1·25; and twenty hours later 0·015."[1] Again: "In Sternberg's experiments sporeless bacteria were destroyed under favourable conditions"; but he admits that "the conditions of success are such that it appears almost impracticable to conform to them in practice on a large scale, and it is evident that much of the so-called 'disinfection' with this agent is a farce."[2] Thoinot, however, maintains that for tuberculosis, glanders, typhoid fever, cholera, diphtheria, "sulphur dioxide" has a disinfectant action.[3] He recommends 60 grammes for each cubic metre. But Wolffhügel found that twice this quantity cannot be trusted to destroy even sporeless infection in room-disinfection."[4] Dr Novy (acting for the State Board of Health of Michigan) found, by strict experiment in an almost gas-tight room, that "sulphur fumes possessed little or no action on most bacteria when in the dried state. If, however, the specimens are actually wet, they will be destroyed, except in the state of the resistant forms, such as the spore state and tubercle bacilli. For tubercle bacilli or spore-containing material, wet or dry, it is of no value. It can be used for the disinfection of rooms which have been infected with ordinary disease organisms. From 3 to 6 pounds of sulphur must be burned in each 1000 cubic feet of space. The evaporation of water in the rooms where the articles are to be disinfected does not suffice. The walls, floors, and articles in the room should be sprayed with water. The room should be made perfectly tight, and should be kept closed at least twenty hours."[5] If

[1] Maine Report, p. 362.
[2] "Disinfection and Disinfectants," 1898, Concord, p. 64.
[3] Maine Report, p. 362
[4] *Ibid.*, p. 364.
[5] *Ibid.*, p. 365.

these conditions are essential to success, clearly sulphur fumigation as ordinarily carried out in this country is of little or no disinfective value. These conditions of efficiency take no account of the incidental disadvantages of sulphur, *e.g.* the bleaching of wall-papers and clothing.

The disagreeableness of the vapour is neither here nor there. That is probably an advantage, not a defect, and some maintain that the compelling power of a disagreeable smell is the main justification for continuing fumigation. I do not deny the compelling power, but I have not much belief either in the immunising effects of uninformed confidence or in the direct ventilation insured by sulphurous smells. No method can finally rest on such an argument. The somewhat misnamed "moral" effect of fumigation will not kill germs, and that is the beginning, middle, and end of the question.

Clearly there is a variable factor somewhere. Klein suggests that certain germs—e.g. *B. subtilis*, *Micrococcus ureæ*—thrive in an acid medium, and therefore sulphur may sometimes fail. It is certain that sulphurous acid is a powerful reducing agent, and therefore may act rather as a cleanser than as a disinfectant. But the results referred to are sufficient to make one hesitate before accepting it as reliable in the rough conditions of house-disinfection. It is on all hands admitted that the dry gas—sulphurous anhydride—is itself of little value as a germicide, even in the most favourable concentration, but it has been maintained by Dr Rideal that the moisture in the air of British climates is, as a rule, sufficient to convert the inefficient anhydride into the efficient acid. This is somewhat slender ground to form the basis of a universal practice. So far, however, in favour of sulphurous acid.

On the opposite side I give one or two facts. Professor Sheridan Delépine[1] found that when "large drops of typical tuberculous sputa were dried on pieces of paper and placed in various parts of the rooms to be disinfected . . . sulphurous acid was perfectly harmless so far as the bacillus was concerned. The tuberculous matter resisted the effects of exposure to sulphurous acid for a very considerable length of time, and showed no marked loss of vitality or virulence." Dry chlorine gas produced little effect, but 1 per cent. hyperchlorite of lime solution was found extremely potent. Even when anthrax spores were tried they were killed in a few minutes. It is a fair inference that both sulphurous acid and chlorine are most potent in solution. If these facts are so, it seems to me utterly futile either to rely on sulphur fumigation or even to use it as a preliminary when a house has to be disinfected for tuberculosis.

[1] *Journ. of San. Instit.*, January 1898, p. 403.

Possibly the tubercle bacillus, as it resisted the ordinary methods of staining, is specially resistant to certain germicides, and therefore cannot be taken as typical either of staining or disinfection. Before, however, I come to the practical deduction I wish to make, I should like to give an instance to cover other than tubercle and anthrax, which, after all, are comparatively uncommon germs in routine disinfective work. In the Maine Report[1] are recorded some experiments with sulphur fumigation. The experimenters—Professors F. C. Robinson and B. L. Bryant—were testing the value of formaldehyde, and as "a comparative experiment in room-disinfection, 12 pounds of roll sulphur were obtained for one of the same rooms used in the aldehyde experiments. This has a capacity of rather more than 2000 cubic feet. The sulphur was placed in an iron kettle, and this in a copper tank filled with water so that the water came up around the kettle above the top of the sulphur. The sulphur was wet with alcohol and set on fire, and the room closed as tightly as possible. Diphtheria and anthrax cultures, soaked into bits of blanket, were placed about the room, some free and others in packets. Twelve hours afterwards the sulphur was found still burning, and so the room was left closed for twenty-two hours. In the morning it was impossible to enter the room to collect the cultures until after the windows had been opened for some time. All the windows were covered with a heavy dew of sulphurous acid, and the Pétri dishes and cultures in the same way. Two or three litres of water had been evaporated and all the sulphur burned. Every one of the cultures grew luxuriantly after a day's incubation. This result was so decidedly positive that it was thought unnecessary to make further experiments with sulphur. It showed how utterly worthless this agent is by the side of formaldehyde disinfection, even when properly used in these large amounts." The contra-experiments with formaldehyde were not always absolutely successful, but the results were, beyond all comparison, better than anything I have referred to regarding sulphur.

To bring this collation of discrepancies to a point: First, to be of any real disinfective value, sulphur must be burnt in the presence of water or water-vapour; second, the efficient agent is the sulphurous acid so formed; and third, the deposit of this liquid acid on the infected surfaces is the essential part of the whole process. These appear to me fair inferences from the facts I have described. But if the deposit of the liquid acid is the essential part, why not apply it directly to walls and other infected localities by a spray or jet? Surely burning sulphur for hours is a very roundabout way of applying a liquid disin-

[1] Page 167.

fectant to a wall. It is a vastly more simple matter to begin with the liquid and spray it directly on to the wall. Fumigation takes hours; spraying, to produce a much more definite and controllable result as to deposit of liquid, is a matter of minutes. That, however, raises the question, Is it worth while to spray on a liquid that stands the bacteriological tests so inconstantly? For my own part, I do not think it is, and the choking effect of the liquid acid would be even more disagreeable than formalin or hypochlorite of lime, both of which are demonstrably more reliable.

On the whole, therefore, after a fair estimate of disinfective value and practicability, I conclude that the time has now come for the discarding of sulphur fumigation. Personally, I discarded it for house-disinfection three years ago—that is, as soon as I was placed in executive control of such disinfection. For hospital-disinfection, I discarded it four years ago. I have not discovered any new facts that would lead me to revert to sulphur fumigation either for houses or for hospitals.

The detailed discussion of the remaining disinfectants I reserve for the completed paper. My endeavour here has been to clear our minds on sulphur. The remaining points are: (*a*) Which of the disinfectants to choose—corrosive sublimate, chloride of lime with hypochlorite, lysol, carbolic acid, or formaldehyde? (*b*) Which method of applying them to walls are we to choose—sponging, brushing, hosing, spraying, or, in the case of formaldehyde gas, evaporation of formalin, or repolymerising of paraform, or partial combustion of methylic alcohol, or any of the other modes devised for flooding a room with formaldehyde or glycero-formol? One point I consider of importance in estimating any of these methods. In every case referred to, it is cubic space that is described, but if we displace the air by simple ventilation it is not cubic space that we have to disinfect; it is superficial space: it is surfaces of walls, floors, ceilings, furniture, etc. In estimating the necessary quantities, therefore, even of a gas, the primary matter is not the cubic content of the room, but the superficial area of the sides, and if a way can be found of applying the gas directly to the surfaces, it is absolutely immaterial whether the germicidal amount is present in the centre of the room or not. In the case of formalin, for instance, the gas is slowly liberated from the liquid applied directly to the objects. The liquid subdues the dust and fixes it in place. This fixation puts any germs temporarily *hors de combat*, so giving at once more time for attenuation of virulence and less opportunity for new infection. To lay the dust physically, therefore, is in a vast proportion of cases temporary, and it may be permanent, disinfection. Further, by the fixation of

the dust the gas is concentrated at the infected points. The slower it is dissipated into the room, the better. If, therefore, any way can be devised of getting formaldehyde rapidly on to the walls or other infected surfaces, that way would have the preference. And what applies to formaldehyde applies to any other soluble gas or solution capable of generating gas.

(*To be continued.*)

Editorial Notes and News

School of Medicine of the Royal Colleges, Edinburgh.

At a meeting of the Governing Board of the School of Medicine of the Royal Colleges, Edinburgh, the Secretary, Mr R. N. Ramsay, reported that the number of students attending the School during the Session past concluded was 1109. This indicates how much extra-mural teaching is taken advantage of, for although all the students attending classes in the School of Medicine of the Royal Colleges are not University students, the larger proportion of them are.

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE ninth meeting of the session was held on Wednesday, July 4th, Mr A. G. Miller, the President, in the chair.

Dr Norman Walker showed (1) a woman with an affection of the skin of the nose closely resembling lupus erythematosus. The lesion was, however, asymmetrical, and the development had been more rapid than usual in that disease. The case was a good illustration of the importance of thorough examination, for on examining the mouth a typical syphilitic ulcer of the palate was discovered.

(2) A case of rupia, which he agreed with Mr Hutchinson was by no means a common syphilitic lesion. The patient was a child aged six, and had other marks of congenital syphilis. The lesions themselves were very typical, and the nummular scars left even more so.

(3) A case of ringworm of the head. When first seen the case presented no peculiarities, but under treatment the large nodules disappeared and their place was taken by very numerous small "tubercles," to use the old denomination. The fungus was of the "rosary" variety.

Mr Dowden showed a boy, aged five years, who had been operated on three times for tubercular disease of the upper ulnar epiphysis, which had eroded and entered the elbow-joint. It was treated by scraping and by the application of pure carbolic acid. The wound has now quite healed, the expanded bone has fallen in, and the elbow is unimpaired in its utility.

Mr Dowden also showed a specimen of strangulated undescended testicle due to torsion of cord from a boy fourteen months old. Symptoms—vomiting, pain and constipation, began five days before admission to Sick Children's Hospital, and operation disclosed a condition of strangulation, the cord being twisted from left to right, producing thrombosis and apparent death of the testicle; the testicle and cord were removed.

Dr Logan Turner showed a case of asthma associated with chronic suppuration in the left frontal and maxillary sinuses. The patient was a man aged thirty-five who suffered from asthma and nasal discharge. Suppuration in the left maxillary sinus and left frontal sinus was diagnosed and a radical operation performed on both these cavities. The discharge ceased, and the asthma was completely relieved.

Dr W. Russell showed a case of myxœdema in the male. As the condition was comparatively rare in men, he thought the members might like to see the patient before treatment commenced.

He also showed (*a*) a brain from a recent case of hemiplegia and aphasia which had lasted for about two months. There was a large area of softening in the region of the internal capsule and the parts external to it, caused by thrombosis due to extreme atheroma of cerebral vessels. (*b*) A brain from a long-standing case of hemiplegia and aphasia, with a very large multiloculated cyst in much the same position as the softened area in the preceding case. It was due to embolism from an acute endocarditis. The patient came home from the East some twelve years ago with the hemiplegia and aphasia, and was thought to have had "sun-stroke"!

Dr Gibson showed a patent ductus arteriosus and microscopic specimens of the filaria sanguinis in the proboscis of the mosquito.

Dr Harvey Littlejohn showed the following specimens:—

(1) Rupture of the heart. The deceased was caught between two wagons, and his chest compressed. There were no marks of external injury, and the ribs were not fractured. The rupture was one and a half inches long, and situated in the right auricle.

(2) The stomachs from two cases of carbolic acid poisoning. In one case a strong solution of the pure acid was taken suicidally. In the other a woman took by mistake a quantity of crude carbolic acid used for cleansing boilers. Death occurred in twenty minutes.

(3) The liver from a case of acute yellow atrophy. The deceased was pregnant and near full time. She had constant vomiting for a fortnight before delivery, which had to be effected by means of the forceps on account of inertia uteri. She died thirty-six hours afterwards from syncope. The body was intensely jaundiced, and there were a large number of hæmorrhages in various parts. The stomach (shown) had ruptured, as a result of *post-mortem* digestion. The uterus was perfectly normal and healthy.

Dr Fleming exhibited the following specimens:—

(1) Tubercular pericarditis. He stated that in fully 1000 *post-mortem* examinations which he had performed this was the only case of the kind he had met with, and expressed the opinion that it was a very rare pathological condition, at least in this country. The specimen was obtained from a man aged about forty years, who died of general miliary tuberculosis originating in the lungs.

(2) Two hearts with patent foramen wall. The first was from the collection of specimens made by the late Dr Rutherford Haldane, and showed a very large communication between the auricles. The second resembled the condition of things seen in many normal adult hearts, only that the valvular flap admitted the passage of a twelve bougie although it was improbable that much blood could have passed from one auricle into the other.

(3) Fatty degeneration of the heart. The specimen belonged to a patient aged about fifty who died in Dr Affleck's Wards from pernicious anæmia, and the condition, which was very marked was limited almost entirely to the left ventricle.

Dr Bruce showed a brain from a case of aphasia.

The following papers were then read, the first and the third appearing in the current number of *The Scottish Medical and Surgical Journal*:—"Clinical notes on residual urine in cases of enlarged prostate," by Mr A. G. Miller; "Note on case of paralysis of the vertical movements of the eye with conservation of the lateral conjugate deviation," by Dr A. Bruce; "A case of Landry's paralysis (with pathological specimen)," by Dr A. James and Dr Fleming.

Edinburgh Obstetrical Society

Discussion on the Treatment of Dysmenorrhœa

THE annual summer meeting of this Society was held in the Hall of the Royal College of Physicians, on the 11th inst. Dr Milne Murray, President, in the chair.

Professors Sänger of Prague and Fehling of Halle were elected Honorary Fellows of the Society.

The discussion on the "Treatment of Dysmenorrhœa" was opened by Dr Haultain, whose paper appears in this number of *The Scottish Medical and Surgical Journal.*

Dr H. M. Church said that prevention was better than cure, and, therefore, care should be exercised over developing girls while they are at school. Education of the mind is often carried on with total disregard to the health of the body. Dysmenorrhœa is most common amongst the cultured and educated classes, and consequently this ought to direct attention to the system of education. The girl while at school is subject to a more or less continual excitement. This naturally affects all the secretions, consequently there may be a deficient secretion of mucus from the cervical and uterine mucosa. Coagulation of the blood will thus tend to take place more readily in the uterine cavity, and consequently uterine contraction will result. Dr Church stated that he treated girls suffering from severe dysmenorrhœa by rest in bed or at least on a sofa for two or three days, looking upon the condition as a miniature labour. He also stated that pelvic pain was frequently rheumatic in character, and that this might lead to anteflexion and stricture of the os internum. He advocated the use of sodium salicylate in such cases, and had noted great benefit to result from horseback or cycle exercise.

Professor Kynoch of Dundee stated that in the case of young girls affected with the uterine variety of dysmenorrhœa, local remedies ought not in the first place to be employed until constitutional remedies had been thoroughly tried. In his hands rapid dilatation of the cervix had not been very successful, and he employs a laminaria tent introduced for twelve hours and then replaced by a larger one. The cervix is subsequently plugged with sterilized gauze, and Professor Kynoch has never been troubled with septic conditions. In rheumatic patients the trouble is usually extra-uterine in situation, and here the *very* hot douche introduced through a vaginal speculum has proved of great value.

Dr Foulis, Edinburgh, said that the causes of dysmenorrhœa were very numerous, and were he absolutely sure that the uterine condition were the actual cause, he would advocate local examination and treatment. He narrated several causes and stated that complete recovery often enough took place without any treatment, especially after marriage. He stated that he had obtained remarkable benefit from the use of iodide of potassium in such cases. Given some days previously to the menstrual flow, it relieves congestion and brings on the period

in amenorrhœa. Anodynes are very dangerous, and alcohol especially. The ovaries may be very greatly diseased, and yet no symptom of dysmenorrhœa may be present.

Dr Connell of Peebles stated that even amongst healthy country girls dysmenorrhœa was frequent. He would have the greatest hesitation in examining a virgin, and warned practitioners against the employment of this means of diagnosis unless everything else had failed. He noted that bicycling had reduced the number of sufferers greatly. In three out of every four cases of dysmenorrhœa he was sure that constipation was the prime factor, and agreed with Dr Foulis in the use of such drugs as salicylates and antispasmodics, though alcohol in no shape or form was to be prescribed.

Dr Carr of the Western Infirmary, Glasgow, gave details of sixty-three cases of dysmenorrhœa. He said that so-called "membranous dysmenorrhœa" should be removed from this class, as it results from an inflammation of the uterine mucosa (really it is an endometritis exfoliativa menstrualis). For practical purposes dysmenorrhœa may be grouped into those cases where (1) the lesion is apparent, *e.g.* inflammation of tubes or ovaries; (2) when there is doubt as to whether a lesion is causing the pain; and (3) where no lesion is discoverable. Dr Carr believes that stenosis of the os internum or pathological anteflexion are causes of dysmenorrhœa. He has not found drugs to be of much value, with the exception of antipyrin and phenacetin.

Dr Barbour, Edinburgh, noted the importance of pain as a symptom. He drew attention to the great value of the Weir-Mitchell method of feeding up a patient, and so lessening the over-sensitiveness of the central nervous system. Dr Barbour believed strongly in the medical and dietetic treatment of dysmenorrhœa.

Dr James Ritchie did not believe that uterine flexion *per se* was a frequent cause of the affection. There must be, he thought, a something superadded, and this is usually inflammatory in character. Most cases of dysmenorrhœa require no operative treatment, the hot douche and ichthyol inunction being generally sufficient. Dysmenorrhœa is often associated with anæmia, and a cure of the latter usually greatly benefits the former. He noted the occurrence of rheumatic dysmenorrhœa, and stated that he had not found dilatation of the cervix to be of great value. A large proportion of cases occurred amongst nervous women, and attention to the general health of such and their employment frequently alleviated the affection greatly.

Dr Holmes of Chicago did not believe in the so-called mechanical theory of dysmenorrhœa, and thought that an excessive nerve supply to the uterus might be a cause of painful menstruation.

Drs Ballantyne and Milne Murray took part in the discussion, and Dr Haultain replied.

The members afterwards dined together in the Royal Hotel, and spent a pleasant evening together.

THE eighth (additional) meeting of the Society was held on the 27th inst; Dr R. Milne Murray, President, in the chair.

Dr Lamond Lackie read notes on an interesting case of *Suppression of Urine following Cystitis*. He stated that cases of chronic cystitis were notoriously difficult of cure, and that their course frequently lasted years. When death occurred it was seldom due to disease of the bladder alone, and that in most cases a septic pyonephrosis was the fatal cause. The case which he described was that of a woman aged forty-three, who suffered from chronic cystitis. In order to relieve this the urethra was dilated and lavage applied. This was followed by complete relief of the symptoms, although incontinence of urine remained for the succeeding eight years, during which period the patient had a fairly comfortable existence while wearing a portable urinal. At the end of this interval, however, she was seized with complete suppression of urine which lasted ten days. During this attack she suffered little except from nausea and vomiting. There was no marked general dropsy. She improved greatly under the administration of diuretin and digitalis internally, together with hot air baths and fomentations of digitalis to the loins. On the second day of this treatment urine began to flow and tube casts were found to be present on examination. She progressed well for the succeeding eight days, when she again became nauseated and suffered from suppression of urine. In spite of renewed and vigorous treatment she died four days later. The *post-mortem* examination showed that most of the internal organs were healthy, but the pelvis and calyces of the right kidney were dilated and there were interstitial changes in the substance. There was a condition of pyelitis, together with an acute catarrhal nephritis; hæmorrhages and necrotic ulcers were present. The left kidney was almost entirely replaced by caseating material. In both ovaries dermoid tumours were present and the bladder was only two inches in length.

The acute septic nephritis of the right kidney was evidently the cause of death, though curiously enough there was no pyrexia or uræmic symptoms. In view of the pathological conditions present, no treatment would have availed, and it

was remarkable that the patient did improve during the treatment at first.

Dr N. T. Brewis read two papers. The first was on "A case of Cæsarean section followed by sub-peritoneal hysterectomy."

The second paper described a "Mode of cleansing the peritoneum during cœliotomy." One of these papers appears in this number of the *Scottish Medical and Surgical Journal*, the other will appear in our next number.

Various specimens were exhibited by Drs Fordyce (for Professor Simpson), Lamond Lackie, Brewis, J. Stuart Nairne (Glasgow), and Foulis.

Forfarshire Medical Association

THE forty-second annual meeting of the Association was held in the Royal Hotel, Forfar, on Thursday, June 28th; Dr Templeman, Dundee, Vice-President, at first presided, but later on gave place to Dr Grant, Glamis, President.

The minutes of last annual meeting were read and approved of.

The Secretary's Report and the Treasurer's Report were then submitted and approved.

Dr Cable moved the election of the following office-bearers for the ensuing year:—President, Dr Aymer, Bervie; Vice-Presidents, Dr Young, Dundee, Dr Urquhart, Perth; Council—Drs M'Gillivray, J. W. Miller, Dundee; Professors MacEwan and Kynoch, Dundee; Dr Sturrock, Broughty Ferry; and Dr M'Alister, Forfar.

Local Secretaries as before, and also the Secretary and the Treasurer. After other business was discussed, the President then delivered a very interesting address dealing with several interesting cases he had had under his care.

Dr Lawrence, in proposing a vote of thanks to the President, expressed the pleasure they all had in listening to this address. He also said that he was glad the President had chosen to deal with cases in his address, as they used to have interesting medical papers read at their annual meetings, a custom which had latterly dropped out of use.

Professor MacEwan seconded this, and also spoke on several of the surgical cases which the President had brought forward.

This motion was heartily agreed to.

The following gentlemen sat down to dinner:—Dr Grant, Glamis; Drs Alexander and Cable, Forfar; Drs Lawrence, Key, and Havelock, Montrose; Dr Urquhart, Perth; Dr

Russell, Arbroath; Dr Rorie, Liff; Dr Tennant Bruce, Broughty Ferry; Dr Neave, Friockheim; Professor Stockman, Glasgow; Drs Templeman, Johnston, Sinclair, Young, Principal Mackay, Professors Stalker, Kynoch, MacEwan, Marshall, Drs Buist, M'Gillivray, Kinnear, Tulloch, Gray, Guild, Jubb, Foggie, Mackay, and Halley, Dundee; Dr Orr, Tayport; Dr Alexander, London.

After dinner the usual loyal and patriotic toasts were suitably proposed and enthusiastically responded to.

Captain M'Gillivray suitably replied for the Imperial forces.

The Secretary then intimated that apologies had been received from the following gentlemen:—Professor Wyllie, Edinburgh; Professors Reid, Finlay Matthew, and Hay, Aberdeen; Dr Milne Murray, Edinburgh; Fleet-Surgeon Brown, Dundee; Drs Maclaggan-Wedderburn, M'Alister, and Peterkin, Forfar; Drs J. W. Miller and W. G. Campbell, Dundee; and Dr Aymer, Bervie.

Professor Stockman then proposed the "Forfarshire Medical Association," to which Dr Lawrence replied.

Dr Urquhart, Perth, proposed the "Infirmaries and Asylums of Forfarshire." Dr Rorie and Professor Stalker replied.

Dr Sinclair proposed the health of the "President," and referred to the admirable way he had conducted the work of the meeting. The President thanked all present, and proposed the health of "Dr Key," one of the three remaining original members. Dr Key replied.

Dr Buist proposed the health of the Secretary, and the Secretary replied. The meeting then broke up.

Before the meeting several of the members paid a visit to Glamis Castle, and were handsomely entertained by their President before leaving Glamis. A few of the members, after dining, availed themselves of the kindness of the local golf club, and engaged in golf on the links.

New Books and New Editions.

The Early Days of the Royall Colledge of Phisitians, Edinburgh. The extended Oration of the Harveian Society, Edinburgh, delivered at the 114th Festival by the President, ROBERT PEEL RITCHIE, M.D. F.R.C.P.E., F.R.S.E., &c. 4to, pp. xiv. 313, with 12 full-page illustrations. Edinburgh: George P. Johnston. 1899. Price 25s. net.

THE Harveian Society of Edinburgh has laid the profession under a deep debt of gratitude, since it called forth from its

president the charming volume which is now before us. Of course it was not the mere incident of the annual oration which started Dr Peel Ritchie upon the task of clearing up the early history of the college of which he is a distinguished Fellow. There is too much of the *laudator temporis acti* evident in its pages to let us imagine that, but if it did no more than stimulate and fix his attention on this special period, the oration has conferred a conspicuous benefit. The original idea of the address was to sketch the effect of Harvey's life and work upon the development of medical institutions and of medical teaching in these islands, but once he had begun upon the early history of the "Colledge of Phisitians" the orator was cast under a spell which urged him further and further in his researches, with the result which we now see. Dr Ritchie has acknowledged his obligations to the Harveian Society by giving his work in the form of an amplified oration; though, for our own part, and it is the only invidious criticism we have to make, we think it would have been better to have pieced his facts together without any reference to the original address.

The volume is divided into five parts dealing respectively with the epoch of Harvey, the attempts to found a "Colledge of Phisitians" in Edinburgh, the early days of that college, its first knights and fellows, and its subsequent history up to 1726.

Harvey died in 1657, and at that time there was no university or medical school in the three kingdoms where a medical education could be got. A Professor of Medicine had indeed been appointed in Oxford as early as 1535 and in Cambridge in 1540, but they seem to have been mere honorary posts as the incumbents did not teach, and degrees were conferred without examination. The licence to practice medicine or surgery was in the hands of the ecclesiastical authorities, and though sometimes they asked some sort of examination at the hands of qualified men, it was as often given without that formality. Some teaching of anatomy was given by the Incorporation of Surgeons and others, but knowledge in this direction was mainly acquired from the lower animals. Even so late as 1790 we are informed that the anatomical instruction given at Aberdeen University was conveyed almost solely by the dissection of dogs. Progress, however, was more than usually slow in the north, for we find that up to 1825 the degree of M.D. was given at Aberdeen on the recommendation of some physicians of eminence, and in St Andrews the practice continued till the year following. The opportunity of practical knowledge of disease was gained by apprenticeship and by study at foreign hospitals. The first mention of clinical instruction in England

occurs in relation to St Thomas's Hospital when it was rebuilt in 1694, and the example was not rapidly followed. Altogether, things medical were in long clothes for many a year after Harvey's time, and indeed Dr Ritchie acknowledges that "I have failed to discover the influence of that great man or of his teaching directly affecting more than one of them" (*i.e.* the medical institutions of these islands).

Having given a resumé of the medical condition of Great Britain and Ireland, extending to some thirty-nine pages, the author devotes the rest of his work to the history of the College of Physicians, Edinburgh. Few if any great advances in science have been made at one step; the foundations have been laid deep by many unknown workers, and many a stone has been silently swung to its place before the man arises who crowns the edifice, to the wonder and delight of those who have not noticed the preliminary stages, and who regard him as a veritable magician. So it is in material progress. Efforts had been made to found a College of Physicians in Edinburgh as early as 1617, and indeed King James I. had held the proposal in some favour, but circumstances were not ripe for it. Again in 1630, and later in 1657, attempts in the same direction miscarried. Little seems to be known about these efforts, but within three decades later the time was propitious, and the man was at hand. In 1662 Robert Sibbald, with the honour of his M.D. degree obtained at Angers still fresh upon him, settled in Edinburgh, and with him came the enthusiasm, the tact and the energy that headed a fourth attempt, and led it to success. The disputes between the existing medical institutions in Edinburgh brought about what the novelists call the psychological moment, and Sibbald struck his blow then. Much, if not all the notable achievement of the early days of the "Colledge" arose at his instigation, and through the mists of two hundred and twenty years the magic glass of our author lets us see him towering above his contemporaries, the master spirit of his time and place.

Already Sibbald had shown his passion for progress. In 1676, along with Dr Andrew Barbour, he founded the Physic Garden, which, at first located in the North Yards, Holyrood, was afterwards transferred to Trinity Hospital grounds, near the North Loch, and gradually developed into our present Botanic Gardens. The first superintendent of the Physic Garden was about 1695 appointed the first Professor of Botany in King James's College. Another advance was made by Sibbald in 1680, when he induced some of his professional friends to meet in his house once a fortnight for conferences—apparently the pioneer Medical Society of the city. Later on these conferences became established as weekly meetings of the College of

Physicians, and a monthly discourse by one of the Fellows to the other Socii was begun. The indomitable character of Sibbald is perhaps most clearly shown in the foundation of the College in spite of the strenuous opposition of the Surgeons, the Town Council, and the University. At all events he seems to have impressed and gained the admiration of his antagonists, for in 1685 he was selected by the Town Council to fill the newly erected Chair of Medicine in the University. By a curious turn of affairs Sibbald never lectured as Professor, and indeed the office soon after lapsed.

The "Royall Colledge," however, had been started (1681), and it at once set to work for professional advancement. Its work for the improvement of its members has already been mentioned, but it inaugurated another scheme fraught with benefit to the people of Scotland generally. This was the publication of a Pharmacopœa. A dispensary, again the pioneer of such institutions in Edinburgh, gave scope for the charity of the Fellows. The mere enumeration of these things shows the high ideals before the "Colledge," but the knowledge of the surrounding conditions clearly portrayed by Dr Ritchie accentuates a thousandfold the importance of its work.

Finally, the newly erected "Colledge" determined to keep a high level of scientific attainment among its Fellows, by admitting only such candidates as could pass a stringent and, what was absolutely novel then, a practical examination. The "tryall" consisted of three parts, one upon the institutes of medicine, the second upon the Hippocratic axioms, and the third upon two "practicall caices." There were two examiners on each part, and all the Fellows who were able were present at the examination. Upon this subject Dr Peel Ritchie descants at some length, giving copious extracts from the early minute books, and he proves conclusively that here we have for the first time in modern Europe a clinical examination.

The relation of the "Colledge" to the University we must touch upon, though we have already exceeded our usual limits. As we have already indicated, the Professorship of Medicine had lapsed, and there was not even a single member to set up the semblance of a Faculty of Medicine. What must have been the astonishment of the Principal and Masters when in 1705 a Mr David Cockburn, student of physic, approached them with the request that the degree of M.D. be given him?

It says something for the Principal and his colleagues that they did not fall into the easy methods of the British Universities of that time. Probably the fact that a really serious examination was demanded by the "Colledge," suggested that the University degree should also be a reality. Anyhow the

Principal had recourse to the "Colledge," which he asked to report upon the merits of the candidate. The Physicians' examination was on the same lines as their own, including the clinical part, and thus the "tryall" received the imprimatur of the University. Later on the clinical was dropped from the M.D. examination, but the "Colledge" still conducted the examination till 1726, when the University, "having a sufficient number of Professors of Medicine to make a Facultie of Medicine," began to examine their own candidates. Thus was the Colledge the foster-mother of the University Medical Faculty, first of all by giving it a method of examination, and later on by furnishing it with Professors. With regard to Mr David Cockburn, student of physic, it is gratifying to learn that his examiners thought him worthy and he received his degree. To the many graduates of Edinburgh University, Mr David Cockburn has a legendary and mythic glory all his own; he emerges suddenly from obscurity to become the first M.D. of their Alma Mater, and as suddenly passes completely from their ken.

Dr Ritchie ends up his history with biographical sketches of the original Fellows, giving ampler details to the lives of its first knights; and thus ending the "early days," has a few words to say about "afterwards." Of these, as well as of the schism among the Fellows which led to a vexatious lawsuit with great discredit to the College, we have no time to speak. For these, we must refer the reader to the book itself. Its hero is undoubtedly Sir Robert Sibbald, and we can cordially join the author in his admiration and appreciation of that remarkable man. Dr Ritchie's pride and satisfaction in his own "Colledge" are everywhere apparent, and no one can deny that he has made out a strong plea in favour of its extraordinary influence upon medical progress in these countries. This is not the place to cross swords upon points of antiquarian interest, but we may say that the author seems to have exhausted every source of information in order to be certain of his facts. He has had the good fortune to be able to extend our knowledge of this period to a considerable extent.

We congratulate Dr Peel Ritchie upon the success which has crowned his efforts. It is due to the publisher, too, to record that in his department he has left nothing to be desired. To all interested in Medical Education, to all lovers of Auld Reekie, to all the medical offspring of this city, this work will have a strong fascination, and no one can rise from its perusal without feeling stimulated by the example of the enthusiasm of these early pioneers, over whom, alas! the iniquity of oblivion hath blindly scattered her poppy.

A Manual of Surgical Treatment. By W. WATSON CHEYNE, M.B., F.R.C.S., F.R.S., and F. F. BURGHARD, M.D. and M.S. (Lond.), F.R.C.S. In 6 parts. Part III. Pp. 305 with 100 illustrations. London: Longmans, Green & Co. Price 12s.

THE third part of this manual deals with the treatment of surgical affections of Bones, and with Amputations. The surgery of the joints has, from want of space, been relegated to the next volume; while the consideration of injuries of the skull, spine, jaw, hyoid bone, and ribs, has, wisely we think, been delayed till the more strictly regional part of the work is reached.

We should not be astonished if this volume met with less unanimous approbation than its predecessors. Each surgeon has his own views on the treatment of individual fractures, and if he has not himself invented an apparatus for a certain fracture, he usually pins his faith to some particular method to the exclusion of all others. Inasmuch as the authors have only described those methods and appliances which they themselves have found useful, they must be prepared to meet the criticisms of those whose views do not in every respect coincide with theirs. Their position is perhaps the only practicable one under the circumstances. Where so many alternative plans are open, it would obviously have been impossible to describe all within the limits at the disposal of the writers. At the same time it must be admitted that the plan adopted gives to these pages an air of dogmatism which is wanting in the previous volumes.

We are prepared, however, to admit that the general considerations (Chapter I.) in regard to the principles involved in the treatment of fractures, and the broad lines on which these principles can be carried out, are calculated to remove many of the objections which might be urged against the succeeding chapters on the treatment of individual fractures. Here we have an excellent resumé of the modern views on the subject, and we specially commend to the reader the author's well balanced remarks on the treatment of fractures by massage and passive movements, and on the general question of the operative treatment of recent fractures. We regret to note, however, that the valuable addition made to our means of treating fractures of the leg by what is known as the "ambulant method" is entirely ignored.

Within the limits which the authors have set themselves, they have succeeded in giving a useful and fairly comprehensive description of the various methods of treating the individual fractures of the limbs. For fractures of the clavicle, however, we certainly prefer the modification of Sayre's method, sug-

gested by the late Mr John Duncan, in which a broad domette bandage is substituted for the uncomfortable and somewhat dirty adhesive plaster. It may be wise to proceed to operate in every case of fracture of the olecranon or patella, as advised by the authors, if the surgeon has at his disposal all the assistance and appliances available in a large hospital, but we doubt the expediency of the country practitioner following this teaching, and we have not ourselves found the results after treatment by splints so unsatisfactory as the authors suggest it to be. We are astonished to find no reference made to Bennett's fracture of the base of the first metacarpal, an injury which is by no means so uncommon as the text-books would lead us to suppose.

As was to be expected, the section on Diseases of Bones leaves little to be desired.

That on Amputations is perhaps the least satisfactory section of this volume. It may be "safe to say that many of the set amputations found in text-books are only performed on the cadaver," but it is equally true that it is only by describing set operations that the principles governing amputation at a given site can be clearly enunciated. These principles thoroughly understood, the young surgeon will have little difficulty in modifying the types to suit the requirements of individual cases.

In the chapter devoted to general considerations regarding amputations, the authors have followed the usual custom of speaking of "long anterior and short posterior flaps," forgetting that what is anterior in the upper extremity is posterior in the lower, and *vice-versâ*. It would save much confusion to the student if the terms "extensor" and "flexor" were substituted for "anterior" and "posterior" in this connection. In other respects this chapter is excellent.

The individual amputations are clearly described, although, as already suggested regarding the treatment of fractures, many readers will not always agree with the authors' preference for particular methods. We miss, for example, any reference to Mr A. G. Miller's excellent plan of amputation at the elbow and knee joints, the merits of which all who have employed it fully recognise; nor does Macewen's method of controlling hæmorrhage in amputations near the hip receive mention. We do not subscribe either to the authors' disparagement of Chopart's or of the Gritti-Stokes amputations. It is doubtless true that shock from amputation through the hip joint may be greatly diminished by adopting the precautions suggested by the authors, but we fail to follow them when they say that "except when done as a primary amputation for injury, the mortality is extremely slight *if the patient be in good health when*

the operation is performed." The indications for this operation are given in the next paragraph, but we do not recognise among them, nor can we conjure up any condition, except for primary injury, under which a patient in good health would require to undergo this most severe operation.

Diseases of the Genito-Urinary System. By EUGENE FULLER, M.D., Professor of Genito-Urinary and Venereal Diseases in the New York Post Graduate Medical School, &c., &c. Pp. 774; illustrated. New York: The Macmillan Company, Ltd. Price 21s.

DR FULLER describes his book as "a thorough treatise on urinary and sexual surgery," and it must be said that the title is an appropriate one. Without being overloaded with useless extracts from all sorts and conditions of writers, good, bad, and indifferent—a blemish to be found in a large number of up-to-date books—this treatise lays before one the matured and valuable opinion of a surgeon of wide experience and discrimination, due reference being made to the really useful work of others.

The book opens with a practical and sufficiently detailed account of the bacteriology of the subject; and with some useful hints as to surgical considerations in regard to the urine. The question of practical asepsis in genito-urinary surgery is very well discussed, and proper stress is laid upon this matter in a way deserving of every praise.

In the treatment of varicocele, Dr Fuller is a strong advocate for the subcutaneous method of ligature, and he defends his position with apparent success. He insists upon the first part of the operation (the passage of the ligatures) being done without a general anæsthetic and with the patient in the erect position, and then completes the operation by tying the ligatures with the patient under chloroform.

In discussing the open method of operation for varicocele, the author does not mention the plan of bringing together the cut ends of the stumps of veins so as to brace up the part; nor does he mention the combination of removal of parts of the varicose veins with ablation of a portion of redundant scrotum —a practice which is probably useful when combined with vein resection, but one which he rightly condemns when practised apart from that procedure, as being based, as indeed it is, on a wrong hypothesis as regards the etiology of the disease.

Dr Fuller states his opinion that tubercular disease of the testicle rarely arises primarily in that organ, but that it usually is secondary to tubercular disease of the urethra or seminal vesicle.

He says that "urethral tuberculosis is by no means a rare disease," an opinion which is not corroborated by most authors, who in most instances make no mention of such a condition. If the condition be as common as Dr Fuller believes, it has certainly not received from most pathologists and surgeons the notice it deserves.

The author is a strong advocate for the partial operation in tubercular epididymitis, and lays down the rule that castration is not necessary "except in rare cases."

At page 146, Dr Fuller describes a clever plastic operation for hypospadias, by utilising a scrotal flap.

In the chapter devoted to gonorrhœa, the author gives the recent views on so-called "latent gonorrhœa," and reminds the reader that in a small percentage of cases—some two to three per cent.—the patient remains infected even after two years. The advisability of stirring up the urethra by the passage of a bougie, and examining the resulting discharge for gonococcus, is insisted upon as a proper precaution in the case of a man who wishes to marry, and has been infected within several months, even though the discharge has long ceased to be evident.

The pages devoted to the subject of examination of the urine, as a help to the exact diagnosis of the site of disease, are well worth perusal, though the exactitude with which such an opinion can be arrived at is perhaps a little too good to be true.

The treatment of urethral stricture is on the whole satisfactorily dealt with, though to Edinburgh surgeons it may seem that a description of external urethrotomy without the mention of Syme's name is rather suggestive of *Hamlet* without the Ghost.

Dr Fuller may fairly be called the apostle of the seminal vesicles. He gives them an importance which, we believe, most surgeons would scarcely concede. He says, for example: "The great majority of derangements of the sexual function are directly dependent on seminal vesiculitis." His description of the proper way to examine the seminal vesicles may be taken as a good example of the excellent, terse, and graphic powers of writing which the author exhibits throughout the book. For his operation of "stripping the seminal vesicle," *i.e.* emptying it by rectal manipulation, he makes claim to great success.

In dealing with diseases of the prostate, Dr Fuller points out the necessity of diagnosing between chronic contraction of the prostatic fibres encircling the vesical neck as contrasted with chronic senile hypertrophy. He also insists very properly upon the absurdity of talking of the prostate *gland*, when so much of

the organ is muscular and so unimportant and accidental a part of it, so to speak, is glandular. His description of the prostate is excellent, and is as interesting as a three-volume novel.

There is much in his chapter on treatment of prostatic trouble which displays keen observation and wide experience, and one is struck by the sagacity of the advice he gives about the vexed questions of castration and vasectomy in such cases.

In dealing with exstrophy of the bladder, the author rightly objects to the use of skin-flaps to make the new anterior bladder wall. Such flaps are always unsatisfactory; hairs develop on the inside of the new bladder and become encrusted with phosphates, while the skin surface desquamates in its new position inside the bladder and dermatitis ensues. He approves of Segond's plan of dissecting off the part of the bladder wall above the level of the ureteral opening and turning it down, and so obtaining a mucous lining for the new bladder. He also approves of Rosenburg's proposal to resect a portion of intestine, keeping its mesentery attached, and using it to fill in a gap in a deficient bladder wall.

In suprapubic cystotomy the author strongly recommends firmly stitching the bladder to the anterior abdominal wall as a preventive to leakage of urine into the space of Retzius, and he carries out this manœuvre in all cases except in children, in whom he usually stitches up the wound in the bladder at once, and trusts for drainage to ordinary urination.

In cases of carcinoma of the bladder Dr Fuller speaks in favour of wide resection, even where the disease attacks the trigone and urethral opening. He records a successful case of this kind.

The subject of calculus in the bladder is well written, but one might wish for better pictures of calculi, the representation of a uric acid calculus being particularly poor. Dr Fuller lays great stress on the necessity for a methodical and systematic examination of the bladder with the sound, and wisely objects to the haphazard plan which, one must confess, is usually adopted. He says that it is possible sometimes to feel a stone in a post-prostatic pouch with a flexible soft catheter when a metal sound cannot reach it; the idea being that the flexible catheter is bent and brought into contact with such a stone by the bladder contraction, when the bladder is allowed to empty itself through the catheter. He has no belief in the "medical" treatment of stones which are too large to escape by the urethra.

In discussing lithotomy, the opinion is given that "lateral lithotomy is practically out of date for adult males." He is in favour of it, however, for boys. For median and bilateral lithotomy he has little respect.

In describing the operation of lateral lithotomy, Dr Fuller says in the most deliberate way that the incision should be made on the *right* side of the patient, and on the *left* side from the operator's point of view. He also talks of the possibility of wounding the *right* seminal vesicle. Is Dr Fuller left-handed, or what is the explanation?

In describing the grasping of the stone with a lithotrite, Dr Fuller recommends passing the instrument first to the fundus of the bladder, then opening the blades, and rotating them so as to make them point downwards towards the base of the bladder, when the stone is grasped. He does not allude to the plan of using the lithotrite with the stone fixed in its blades as a sound for a possible second stone.

The anatomy and physiology of the ureters is again most admirably described, and a full account is given of all the recent advances in ureteral surgery. A judicious moderation is observed in speaking of what can, and what cannot, be done by ureteral catheterisation.

The book concludes with two chapters on the kidney, and here again one feels that old truths are put in such a striking and attractive form that one gets a clearer view than before of the subject.

Dr Fuller's views on renal surgery are very much those of the British schools, and will meet with the approval of most surgeons. He rightly condemns the indiscriminate use of nephrorrhaphy as leading to discredit to the operation. He believes that it is often done in cases of hysteria or gastro-intestinal trouble where a condition of movable kidney has been wrongly diagnosed. He also insists upon the necessity for primary nephrectomy in all cases of tubercular kidney where any operative interference is called for. Drainage of a tuberculous kidney he deems to be useless and even dangerous.

As a whole, the book is a very valuable one: the writing is clear, graphic, concise, and direct to the point, and the illustrations are useful; there is a first-rate index of seventy pages. Misprints are few and far between; the printing and paper is good; and perhaps one has no right in criticising an American book to "harbor" any ill-feeling against such expressions as "considerable of this function," "quite a per-centage," "just back of the corona," and so on. One must be allowed, however, to draw the line at "discrasia"; but as it is spelt further on "dyscrasia," one hopes it may be only a *lapsus pennæ*.

Therapeutic Electricity and Practical Muscle Testing. By W. S. HEDLEY, M.D., M.R.C.S.Eng. Pp. 278. London: J. & A. Churchill. 1899. Price 8s. 6d.

THIS volume is divided into three parts. The first and second deal respectively with physics, and with electrophysiology and electrotherapeutic outfit. It is a question whether in a manual of so small a compass as the one under discussion, more than half the available space should be occupied by subjects which can be better dealt with elsewhere; if they are treated of, the practitioner would profit more if this part of the book contained more explicit instructions for the use of the somewhat intricate pieces of apparatus which are now employed in electrotherapeutics. The notes on the nervous system embodied in the "Memorandum" of pages 153 *et seq.*, are hopelessly archaic.

Nor can much more be said in commendation of the third and most important section which deals with electrotherapeutics. Several of the chapters are ill-arranged, and lack all sense of proportion in the amount of space devoted to the various diseases; but what one most strongly deprecates is the ungrounded confidence which the writer shows in the efficacy of electrotherapy in many conditions where its use is unlikely to be of any service, and where, indeed, nothing but harm can probably result. It is just such indiscriminate advocacy which in past years has injured the cause of electrotherapeutics. In proof of what has been said one need only instance the case of supposed intestinal obstruction, where the author appears to endorse the view that only after the failure of purgatives, of enemata, and of rectal injections of salt water (electrified by being connected to the pole of a galvanic battery) on three occasions during twenty-four hours, should the patient be handed over to the tender mercies of the surgeon. Other examples of the employment of electricity where less ardent specialists might have preferred other remedies are to be found in its use for the treatment of ascites (p. 216), of tedious labour (p. 227), and of redness of the nose (p. 232).

Along with these unexpected applications of electric methods to unpromising conditions, we find a very imperfect acquaintance with the more solid gains which electrotherapeutics have achieved in other fields. Thus the section on aneurism is most unsatisfactory; no mention whatever is made of the work of Mr John Duncan and some other leaders in this department, and the information which the writer does give is so vague as to be quite useless to any intending operator. The last two chapters of this section discuss Cataphoresis and the Hydro-

electric Bath. The latter is merely a condensed transcript from his booklet on hydro-electric methods, the former an expansion of a section devoted to that subject in the same work. Neither contains any new matter of importance, but the description of the use of the bath will be of service to those who wish to give a trial to a method of applying electricity which is often extremely convenient, especially in the case of children, and which promises well in many conditions of disordered nutrition. Taken as a whole, Dr Hedley's book is unlikely to replace the reliable manuals which the profession already possesses, and in their presence its existence is not easily justified.

A Manual of Gynæcological Practice for Students and Practitioners. By Dr A. DÜHRSSEN, Professor in Midwifery and Gynæcology in the University of Berlin. Second English Edition, translated and edited from the Sixth German Edition by JOHN W. TAYLOR, F.R.C.S., and FREDERICK EDGE, M.D. Lond. Pp. 42 and 279, cr. 8vo, with 125 illustrations. London: H. K. Lewis. 1900. Price 6s.

PROFESSOR DÜHRSSEN'S "Manual of Gynæcology" is well known and highly appreciated in Germany, and largely through the admirable translation by Mr Taylor and Dr Edge it is becoming familiar to English-speaking physicians and surgeons also. That it will become equally appreciated is not to be expected, and that not on account of any fault on the part of the author, or by reason of any shortcoming of the translators, but simply because there is a kind of nationality about gynæcological practice, and because details which the German gynæcologist must make himself acquainted with may in many cases be passed over without detriment by a British practitioner. This disadvantage the translators make bold to claim as an advantage, for "it gives a freshness to otherwise well-worn subjects"; but the student, at any rate, does not buy a manual of gynæcology in order to obtain a fresh view of well-worn subjects, and even the practitioner will find that methods of operative procedure quite well received by patients on the Continent may not be equally acceptable to patients in this country. As a matter of fact the translators have recognised this disadvantage in the work, and have attempted to remove it in part by numerous footnotes (some of considerable length) describing the English as contrasted with the German plan of diagnosis and treatment. For instance the reader has to be reminded more than once that gynæcological examinations are carried out

with the patient in the dorsal position and not on the left side, and revised lists of instruments better suited to the needs of the British operator have frequently had to be added in the foot-note. Again it is an instance of the anomalies thus introduced, that five lines of description are given to the Alexander-Adams operation for retroflexion, and eight pages to vaginal fixation of the uterus for the same displacement. Of course the explanation is that Dührssen has specially elaborated the latter method of operation, but that does not make it likely that gynæcologists in this country will be contented with full details of the latter and a bare mention of the former. In a sentence, the manual is a capital text-book for the German student and for the advanced operator in this country who has a desire to compare his well-worn methods with those of Continental gynæcologists, possibly with the idea of adopting them in part; but that it meets the requirements of students and general practitioners in this country is doubtful. The illustrations are generally good, but some, *e.g.* No. 64, are not clear.

Syphilitic Diseases of the Spinal Cord. By R. T. WILLIAMSON, M.D., M.R.C.P., Medical Registrar, Manchester Royal Infirmary, etc. 8vo, pp. 127, with illustrations and four coloured plates. Manchester: Sherratt & Hughes. 1899.

THE author's aim is "to present a more detailed account of spinal syphilis than is generally found in text-books or systems of medicine," and the reader will find that he accomplishes this very successfully.

After a short but excellent general survey of the ætiology, pathology, and diagnosis of spinal syphilis, he describes the symptoms and morbid anatomy of its chief clinical varieties, viz., disease of the vertebræ, meningitis, meningo-myelitis, acute paraplegia, Erb's spinal paralysis, gummata and anomalous forms.

Of twenty-seven personal cases, seventeen occurred within five years from the date of the primary affection, two of them being within the first twelve months. In the pathology he emphasises throughout the importance of vascular changes; they are "not quite conclusive evidence of syphilis," but it appears "extremely probable that they are the cause of the changes in the nerve-elements." A little more attention might well have been paid to the changes in the nerve-elements proper, even if they are to be regarded as secondary.

The account of each clinical variety is good, notably that of

acute paraplegia and of Erb's syphilitic spinal paralysis, and excellent illustrative examples are given. Considerable stress is laid on the occurrence of the syringomyelic type of sensory affection in spinal syphilis: "in all cases of spinal syphilis, before concluding that sensation is unaffected, it is important to examine the sense of temperature very carefully—especially the sensation for cold." Great stress is also laid on the *early* occurrence of bladder troubles in many cases, and on the frequency of Brown Séquard's paralysis at an early stage.

A chapter is devoted to the interesting subject of "syphilis and tabes and pseudo-tabes," and the work closes with judicious and helpful remarks on prognosis and treatment.

There is abundant evidence of careful observation, clinical and pathological, and of extensive reading of the literature, references to which are given at the end of each section.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

SURGERY

SOME RARER FORMS OF DISLOCATION AND FRACTURE

By ALEXANDER MILES, M.D., F.R.C.S.Ed.,
Surgeon to Leith Hospital, and Assistant Surgeon, Royal Infirmary, Edinburgh

Dislocation of the Meta-carpo-phalangeal Joint of the Thumb Forward (Lambret and Labarrière, *Arch. provinciales de Chirurgie*, March 1900). — Forward dislocation of the thumb is a comparatively rare injury, on account of the shape of the bones forming the joint, the great strength of the lateral and anterior ligaments, the disposition of the flexor tendons, and the extent of movement possible in a forward direction.

From a study of the recorded dissections, six in number, and from experimentally produced dislocations in the cadaver, the authors conclude that there are three varieties of this dislocation, and that the position assumed by the thumb depends on the displacement of the extensor tendons. (1) Dislocation directly forward (observed in the cadaver) where the extensor tendons remain in place; (2) dislocation forward and outward, where the extensors are displaced outward; and (3) dislocation forward and inward, the extensors being displaced inward.

Tearing of the lateral ligaments greatly facilitates displacement.

This lesion may be produced (1) by forced flexion of the thumb, as by a blow on the back of the first phalanx; (2) by forced extension, for example, a blow on the front of fully extended thumb; (3) by forced extension with abduction, when the tearing of the internal lateral ligaments renders luxation easy.

Clinical features.—There is no advantage in distinguishing between complete and incomplete dislocation of this joint, the differences are only in degree. Nor are the subjective signs of any special value in differential diagnosis. The deformity, however, is pathognomonic. On the back of the finger, at the level of the joint, is a rounded prominence formed by the head of the first metacarpal, immediately below which is a marked depression. On the palmar aspect the base of the proximal phalanx forms a less pronounced prominence among the muscles of the thenar eminence. The degree of flexion of the thumb on the metacarpal depends upon the amount of over-riding of the bones. The antero-posterior diameter of the joint is increased, and the distal part of the finger is rotated in its long axis, outwards or inwards, according to the direction in which the extensor tendons pass. The radial border of the hand is shortened. There is pain on attempting to move the joint, and the swelling is seldom sufficiently great to mask the appearances.

Reduction is almost always very easy, and even if the injury escapes detection a useful false joint forms. The prognosis is therefore much better than that of backward dislocation. The treatment consists in making traction on the phalanges, and carrying out movements of flexion and extension; reduction as a rule being readily effected. It is, however, very liable to be reproduced, hence it is necessary to apply a secure retentive apparatus, which is left on for ten or twelve days, after which passive movements and massage are employed.

Fracture of the Head of the Radius and of the Coronoid Process (Gallet, *Annales de la Soc. Belge de Chirurgie*, March 1900).—An example of this rare combination of fractures is reported by Gallet. A man of 20 fell from a ladder, landing on his knees and left fore-arm. He was not examined surgically for more than a month after the accident, and then it was found that the elbow was fully extended, movements of flexion, pronation, and supination being much limited. The elbow was swollen, and the head of the radius somewhat prominent. A radiograph showed the head of the radius displaced downwards (sub-luxation), but gave no information regarding the fracture.

On cutting down it was found that the head of the radius was split in two, the inner portion being detached and lying in the joint. The coronoid process was also fractured across its base. The upper end of the radius and the coronoid process were resected. Ten days later passive movements and massage were commenced, and a useful joint eventually resulted.

Bennett's Fracture (*Brit. Med. Jour.*, May 5, 1900).—An interesting case of this injury—which has not received the attention it deserves from systematic writers—is reported by Beatson of Glasgow. The patient, a ship's surgeon, sixteen days before he was seen by the author, fell down his cabin stair, striking the point of the first phalanx of the right thumb against a projecting bit of woodwork. The patient made the common mistake of supposing that the injury was a simple "stave of the thumb," but the X-rays revealed the typical fracture which Bennett of Dublin has described. The palmar half of the articular surface of the metacarpal was chipped off, and the rest of the bone had slipped upwards. The movements of the thumb were much restricted, but after treatment by extension and full abduction of the thumb in a poroplastic splint, a complete restoration of function was effected.

Dislocation of the Mid-Tarsal Joint (Texier and Vianny of Lyons, *Arch. Prov. de Chir.*, March 1900).—The authors report a case of this rare dislocation, of which only four well authenticated cases have hitherto been recorded. The patient was a man of 25, whose left foot was caught between two intersecting railway lines, while a waggon struck his heel from behind. The foot was thus submitted to a severe antero-posterior pressure. There was severe pain, but no cracking; and a marked prominence was found in the instep, with considerable swelling, but no ecelymosis. An unsuccessful attempt to reduce the deformity by traction and pressure was made. After a month of rest in bed the swelling disappeared and the pain diminished, but he was unable to walk. Three months after the accident he was seen by the authors. On palpation the astragalus could be felt as a distinct prominence on the inner side of the dorsum of the foot, filling up the natural hollow in front of the internal malleolus. A less marked projection was felt in front of the external malleolus. The arch of the foot was obliterated, giving the appearance of a flat-foot, an appearance which was borne out by the imprint. The foot was shortened by one centimetre. Adduction and abduction and rotation of the foot caused pain, referred to the level of Chopart's articulation. The patient walked on his toes,

and his efforts produced pain. A radiograph showed that the os calcis and astragalus remained together and were displaced towards the dorsum, while the scaphoid and cuboid had passed towards the sole. No attempt at reduction was made, on account of the time which had elapsed since the accident, and the tendency there was to improvement. Massage and douching effected a great improvement.

This is the only recorded case in which this lesion has been produced by force acting in the long axis of the foot. It is an example of the common displacement in this dislocation, the distal segment of the foot being displaced forward, *i.e.* towards the sole. There was, in addition, a slight inward deviation of the foot, as shown by careful measurements between the bony points. This case presented the four characteristic signs of this dislocation—(1) foreshortening of the foot; (2) elevation of the malleoli from the sole, without alteration of the prominence of the heel; (3) obliteration of the arch of the foot, giving the imprint of flat-foot, with suppression of the prints of the toes; and (4) projection of the first row of tarsal bones (os calcis and astragalus) on to the dorsum of the foot.

A Case of Air Embolism (J. Basil Hall, Bradford, *Quarterly Medical Journal*, May 1900).—Air embolism occurring during a surgical operation is an accident so rare nowadays that surgeons are apt to forget its possibility, even when they are operating in "the dangerous area." It may therefore be worth while to refer to a case, recently reported by Basil Hall, which is specially interesting in view of the fact that it occurred during an operation so common as excision of the mamma, and that recovery took place after prolonged artificial respiration, a method of treatment which some authorities have characterised as not only useless, but harmful.

While the axilla was being cleared, the cutting across of a small vein was followed by a loud sucking noise, precisely like that produced by a small puncture in the pleura. Within a few seconds the respiration suddenly stopped, and the patient gave three or four inspiratory gasps. Extreme palor of the face, widely dilated pupils, slight tetanic spasm of the body, risus sardonicus of the face, and a fluttering and almost imperceptible pulse were the other outstanding symptoms. The heart, however, continued to beat tumultuously and rapidly, and a distinct thrill could be detected on placing the hand over the præcordium. Within a period of twenty seconds of the entrance of the air the muscles had relaxed, the respiration ceased, and the heart-beats became imperceptible. Artificial respiration was at once commenced and strychnine administered hypodermically. In a few

minutes a spontaneous inspiratory effort occurred, was repeated at intervals, and in fifteen minutes the respiration was restored. The operation was completed, and although the condition of the patient was for some hours critical, she eventually recovered.

In reporting this case the author reviews the literature on the subject—clinical and experimental. The "canalisation" of a vein, by holding it taut after puncture, by its passage through a dense fascia, inflamed and œdematous structures, or a firm tissue such as a carcinomatous growth, is an essential factor in admitting air to the circulation. The quantity of air drawn in and the rate at which it enters are also important. Considerable quantities may be introduced, slowly and gradually, with impunity, but even a small quantity suddenly drawn in may prove rapidly fatal.

This accident has occurred most frequently during operations in the region of the neck and shoulder; next in the axilla, and next in the great longitudinal sinus. Opening of the lateral sinus strangely does not seem to have been the source of the entrance of air. It is interesting to observe that air embolism has been described as occurring from the entrance of gases resulting from putrefaction in cases of puerperal septicæmia and gangrene, but such observations are subject to criticism.

After death the right auricle has been found distended with air, or the whole right side of the heart filled with a frothy mixture of blood and air. Air bubbles have also been found in the pulmonary artery and its branches.

Nearly 50 per cent. of cases die immediately, others in a few hours or even days; and sometimes bronchitis and pneumonia supervene.

The accident should be prevented by clamping all vessels before they are divided, by keeping wounds in the dangerous area filled with a bland fluid, and by avoiding dragging on structures in such a way as to keep punctured veins open.

The author recommends artificial respiration, the administration of cardiac stimulants, bleeding to release the right heart; but doubts the value of tracheotomy and inflation of the lungs.

The Practical Value of the White Blood Count in Surgical Cases (by J. C. Hubbard, Boston, *Boston Med. and Surg. Jour.*, 19th April 1900).—The writer of this paper does not concern himself with the scientific aspect of leucocytosis in relation to inflammation and pus formation, but rather con-

siders the value of counting the white corpuscles as an aid to diagnosis and prognosis *in individual cases.* His material is gathered from the records of the Massachusetts General Hospital since 1895.

He takes 9000 as the normal average number for the leucocyte count in a healthy person. He admits that his records were taken without regard to digestive leucocytosis, but, following Cabot, he accepts 13,000 as representing the height to which this may rise.

In 80 cases of appendicitis operated upon during an interval between attacks, and in which no pus was found, the average was 9240, which is very near the normal average; but the individual counts ranged from 4500 to 18,800, showing in some cases a distinct leucocytosis. In 3 cases in which pus was found at operation the average was 4350, a result which is the opposite of what we are taught to expect.

Out of 170 cases of appendicitis operated upon during an attack, 113 yielded pus at operation and 57 did not. In the purulent cases the average was 18,193 (8200 to 38,000), and the non-purulent 15,550 (6500 to 32,600). In 92 per cent. of all the cases the blood count was of no value as an indication of the presence of pus. In 75 per cent. of the cases of acute appendicitis, however, the count was over 13,000, so that the presence of leucocytosis may be of value in the diagnosis.

In general peritonitis the counts of fatal and non-fatal cases were practically the same; and the counts in relation to the temperature of the patient yielded such variable results as to be useless for practical purposes. The only general conclusion that could be drawn was, that 73 per cent. of cases of general peritonitis were accompanied by leucocytosis.

Comparisons were made to determine if the blood count in cases of benign tumours of the ovaries, cysts of the ovary or broad ligament, salpingitis, ruptured extra-uterine gestation, gall-stones, and acute inflammation of the gall-bladder, would furnish any aid in differential diagnosis, but it was not found to do so.

In 35 cases of abscess formation the number of leucocytes ranged from 9000 to 40,000. In acute osteomyelitis the average of five cases was only 16,880, which leads the author to doubt if the increase of leucocytes is dependent on the pressure exerted on the abscess. Several other observations are quoted.

A summary of all the cases shows that in 189 non-inflammatory cases the average was 8811; in 71 cases of inflammation not so great as to form pus it was 12,645; while in 299 cases of pus formation it was 17,696. Over large numbers of cases this shows a distinct rise in inflammatory and purulent conditions,

but as applied to individual cases the figures are less helpful, because in the non-inflammatory group the counts ranged from 4000 to 25,800; in the simple inflammatory from 5600 to 32,000, and in the purulent from 4800 to 47,000.

The author concludes that for clinical purposes the counting of the white corpuscles cannot yet be considered a valuable aid.

OBSTETRICS AND GYNECOLOGY

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The Etiology of Extra-uterine Pregnancy. — The causation of ectopic gestation is still unknown. We are in possession of many theories, but few reliable facts; and as Martin says, "in spite of abundance of observations we have not made much progress as to its etiology." This condition of uncertainty will continue until the physiological site of impregnation is definitely known, and the question finally settled whether extra-uterine pregnancy is the result of an abnormal impregnation, or a normal one hindered in its downward course.

Ingleby (1), writing in 1834, held that impregnation of the ovum might occur anywhere during its descent from the ovary to uterus. Tait (2), however, believed that "the uterus alone is the seat of normal conception," and Bland Sutton (3) states that "when fertilisation occurs in the tubes it is accidental, and tubal gestation is the consequence."

When those conclusions were arrived at it was supposed that fertilisation in the upper part of the uterus was the result of an antagonistic action of the ciliæ of the tubal and uterine mucosa. The former were supposed to act towards the uterus, the latter from the cervix towards the fundus, and consequently the upper part of the uterus was regarded as the seat of normal impregnation (Wyder).

More recently, however, Mandl (4), from the examination of a uterus extirpated by Hofmeier, has shown that those conclusions are incorrect, and that the direction of ciliary action is entirely a downward one. The movements of the spermatozoa are sufficient to overcome this twofold current of ciliary movement. This was proved in 1838, by Bischoff, who found spermatozoa on the surface of the ovary long after copulation, when experimenting on bitches.

The objection taken by Tait that observations from experiments on the lower animals are not reliable sources from which

we can draw conclusions as holding good in the human female, is got over by Dührssen of Berlin, finding spermatozoa in Fallopian tubes after their removal by operation. Strassman (5) believes that every pregnancy is extra-uterine to begin with, and that ectopic gestation is the consequence of retarded movement of the fertilised ovum. Although this theory is not generally accepted, yet most agree that impregnation of the ovum may occur in any part of its passage from ovary to uterus, and that, if permanently arrested during its course, extra-uterine pregnancy is the consequence.

The cause of this arrest is probably in most cases a mechanical one.

Virchow (6) in 1856 pointed out the presence of peritoneal adhesions as of etiological importance, and Martin (7), Wyder (8) and Fritsch (9) all agree as to its frequency. Von Schenk (10) found peritonitic adhesions in 65 out of 93 specimens examined. Fritsch, however, writing more recently, thinks with Martin that those peritonitic adhesions may possibly be the consequence of the irritation associated with the growth and rupture of the gestation sac, and he regards faults in the means of transport (*e.g.* defective movement of the fimbriæ) as of greater etiological importance.

Inflammatory conditions of the uterine appendages have all along been accepted as the most important cause of this complication. Tait held that an impregnated ovum required a surface denuded of epithelium to permit of its proper adhesion, as occurs in the uterus through the process of menstruation. Berry Hart (11) supports this view. Those authorities believe that endosalpingitis associated with destruction of the ciliated epithelium favours "settling" of the ovum and prevents its downward passage. Many reliable observers give evidence in support of this view. Schauta (12), from an examination of 46 specimens, found in 32 distinct signs of inflammatory changes in the tubal mucosa, in 9 of which there was a clear history of gonorrhœal infection. Dührssen (13) in 35 cases found inflammatory changes in 24 (68·7 per cent.), and Kustner (14) concludes "that inflammatory change in the tubal canal is the process which proves in the most reliable manner the occurrence of tubal pregnancy."

Engstrom (15) and Franz (16) also publish examples.

Martin (17), one of the first to emphasise the importance of a diseased mucosa, has now modified his views. He finds that the epithelium is not necessarily destroyed even in the presence of advanced inflammatory disease of the tube; consequently the destruction of the cilia he regards as of less moment than actual mechanical obstruction to the passage of the ovum, *e.g.*

kinking of the tube. J. W. Taylor (18), in his recent work, states that in 43 cases he has not been able to obtain certain evidence of pre-existing inflammation of the tube in a single instance, and Sutton says "a healthy Fallopian tube is more likely to become gravid than one which has been inflamed."

Swelling of the mucosa, as Webster (19) has shown, by the formation of a tubal decidua (a view supported by several German authorities), may also act as an obstacle to the progress of the ovum.

Freund (20) first pointed out that the persistence of an infantile type of tubal development may be of importance. In Schauta's list of 35 cases he found this atrophic condition well marked in one instance, and Abel (21), from an examination of three specimens, regards ectopic gestation as physiological in such cases. It must be noted, however, that in one of his cases the patient had twice a normal uterine conception. Patellani (22) has also noted this tubal condition.

External migration of the fertilised ovum from a healthy tube to the other with an occluded lumen would appear to be a frequent cause. Williams (23) describes a case where the migrating ovum had its passage into the uterus occluded by a lithopœdion, the remains of a previous ectopic gestation. Cases are also noted by Martin, Kreisch (24) and Von Schrenk, the latter demonstrating it in 11 out of 93 cases.

Of the rarer observed causes of a mechanical obstruction to the lumen of the tube may be mentioned tubal polypi, originating either in the tubal mucosa (Beck, Breslau, Dührssen, Leopold) or outside it (Olshausen, Webster, etc.).

Diverticula of the tube and accessory ostia at the ampullary portion have frequently been observed. Williams found the former in five out of thirty specimens examined, and Kossman (25) asserts that an accessory ostium may in the same way act as an obstacle. Tumours originating from surrounding organs have also been noted as the cause of distortion of the tube. Cullingworth (26) and Leopold have each described a case where this had been caused by a uterine fibroid. Ovarian cysts as a cause of tubal obstruction have been observed three times by Taylor and twice by Schauta. When extra-uterine pregnancy is accompanied by an intra-uterine one, the latter may be the cause of the former. A specimen in the museum of the Dundee Royal Infirmary would favour such a view. At the fundus close to the opening of the left Fallopian tube there is a fertilised ovum, the left tube has ruptured close to its uterine end, and it is reasonable to believe that the former had prevented the tubal ovum passing into the uterine cavity.

Ectopic gestation occurs most frequently in multiparæ. This

is shown from the following analysis of 45 cases collected by Glitsch.

45 cases—

6 = nulliparæ.
25 = multiparæ.
12 = one previous full-time pregnancy.
2 = „ premature birth.

The right side is probably most often affected.

45 cases—

Right side = 27 = 57·77 per cent.
Left side = 17 = 37·77 „
Uncertain = 1 = 4·44 „

The most frequent age is 26-36.

45 cases—

Under 20 = 0.
20-25 = 4 = 8·88 per cent.
26-30 = 14 = 31·11 „
31-35 = 17 = 37·77 „
36-40 = 9 = 20 „
41-45 = 1 = 2·22 „
Over 45 = 0

Assuming that extra-uterine gestation is due to some interference with the normal downward passage of the fertilised ovum through the tube, we are justified in concluding that the cause of its arrest may be one or more of the above mentioned pathological conditions.

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The Treatment of Pelvic Peritonitis.—By far the most frequently employed therapeutic agent in gynecology is the hot vaginal douche. There is probably no method of treatment, as it is generally carried out, where the results, especially in inflammatory pelvic conditions, are so unsatisfactory. The cause of this lies not in the therapeutic measure itself, but in the useless manner in which it is applied. It is well known that the cervical and vaginal mucous membranes tolerate injections at a much higher temperature than does the skin of the vulva. On account of the inability of the patient to tolerate the discomfort thereby caused, the most common practice is to reduce the temperature by adding cold water to the desired degree. The result is that the douche may be of service for cleansing purposes, but useless when the indication for its use is an inflammatory condition of the uterine appendages.

Stratz (*Zeitschrift für Geb. ünd Gyn.*, Bd. 42) refers to the operative treatment of inflammatory pelvic conditions as so strongly recommended by Tait, Pean, and others, and gives the results of his own experience, especially in regard to the permanent effect. In 800 cases of diseased appendages Stratz performed laparotomy twenty times. One patient died from septic peritonitis, all the others made satisfactory recoveries. Six continued well from six months onwards after operation; four did not improve for six months; and in seven, other methods of treatment had to be employed for periods varying from one to five years. The tubercular cases did better than those with a history of puerperal infection, the most difficult to cure being those with a gonorrhœal history. His results in the treatment of pelvic peritonitis by massage, as recommended by Schultze, and Ichthyol in the form of plugs and abdominal compresses (Unna), have not been encouraging. Stratz believes, however, that the hot douche as carried out by him may greatly diminish the number of cases requiring operative treatment. He refers to Bertram as one of the first to recommend hot water

injections in the treatment of metritis and pelvic peritonitis, and the means used to prevent contact of the hot water with the skin of the vulva, *e.g.* application of oily substances or cold sponges. Stratz introduces into the vagina a funnel-shaped speculum, the wider part of the instrument coming into close contact with the vulva. By its use water at a temperature of 120 F. may be injected without any inconvenience to the patient. About eight pints are injected daily, the treatment being continued on an average for a fortnight. Eighteen cases of inflammatory pelvic disease are described and figured. In fifteen there was complete disappearance of all inflammatory signs and symptoms; the remaining three were tubercular, and the result was not so satisfactory. In those latter cases Stratz recommends operation.

Those results coming from a reliable observer are certainly of value as proving the advantage of a more conservative mode of treating pelvic inflammation, especially in the cases where the cause points to a septic infection.

DISEASES OF CHILDREN

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Gonococcal Infection in Infancy.—Lucas (*Medico-Chirurgical Trans.*, 1899, p. 137) has collected twenty-three cases of gonorrhœal synovitis in infants. Eighteen of these were due to inoculation at birth, five to a later infection. The conjunctiva is the most common primary site, and synovitis may be expected to declare itself toward the end of the second week or during the third week after inoculation. The knees and wrists are the joints most commonly involved, but the other joints of the limbs or the tendon sheaths may be affected. Owing to the way in which children are usually carried the left arm and leg are most exposed to cold and slight trauma, and this is probably the reason for the marked preponderance of cases in which that side is affected. Though the severity of the joint disease bears no relation to that of the conjunctivitis, the synovitis generally subsides as the eyes improve. Complete resolution without loss of mobility may be expected; should suppuration occur a mixed infection is present. The diagnosis is easy if the possibility of the condition be kept in mind. The treatment consists in the application of evaporating lotions and light splints, and the disinfection of the conjunctival sac. Marfan (*Jour. de Clinique et de Thérapeutique infantiles*, iv. 36)

also records two cases of gonorrhœal synovitis in older children following vulvo-vaginitis. In both cases the hands were affected, there was slight fever for a day or two, and complete resolution occurred in eight or ten days. It used formerly to be taught that only a small percentage of cases of vulvo-vaginitis in young children was due to gonorrhœa, but recent observations show that a large proportion—probably the great majority—is due to inoculation (usually accidental) with the gonococcus. Marfan (*Archiv. f. Kinderheilk.*, 1900, xxviii. 423) finds that the organism was present in 262 out of 360 examined. He regards all cases as gonorrhœal which are purulent from their onset, or which do not speedily yield to simple cleanliness. Complications may arise (1) by direct spread, to the urethra, rectum, etc. Cystitis is rare, and is almost always due to the bacillus coli. The disease may even spread to the uterus and adnexa, and give rise to peritonitis. (2) Inoculation to other parts of the body—the eye. (3) General infection—synovitis, and occasionally pleurisy and pericarditis. Neisser and Sternschneider (*Archiv. f. Kinderheilk.*, 1900, xxviii. 423) regard the microscopic detection of the organism in films as quite characteristic; if a coffee-bean shaped diplococcus which does not stain by Gram's method be found *in* the leucocytes, the diagnosis is assured without the necessity for making a culture. Reynolds (*Jour. Amer. Med. Ass.*, 6th Jan. 1900) thinks that ophthalmia neonatorum is usually inoculated after, rather than at birth. The prophylactic instillation of nitrate of silver is not desirable as a routine practice; indeed, the irritation it causes renders the eye more liable to infection.

Congenital Heart Disease (v. Starck, *Archiv. f. Kinderheilk.*, 1900, xxviii. 201).—The diagnosis of the commonest lesion—pulmonary stenosis—rests on the presence of cyanosis from birth, a systolic murmur in the pulmonary area not conducted to the vessels of the neck, enfeebled pulmonary second sound, hypertrophy of the right ventricle, clubbing of the fingers, and signs of chronic venous congestion. A patent ductus gives rise to hypertrophy of the right ventricle, increase of the cardiac dulness along the left sternal border at its upper part, a systolic murmur about the level of the second left interspace conducted into the neck and interscapular region, and accentuated pulmonary second sound; cyanosis is absent or late in appearing. The diagnosis of septal defect (Roger's disease of French authors) is more difficult. A loud systolic murmur obscuring both heart sounds, best heard about the middle of the præcordial region, not propagated into neck and diminishing rapidly in intensity as one leaves its point of maximum audi-

bility, is said by Roger to be characteristic. The possibility of septal defect is always to be remembered in cases of pulmonary stenosis. In this condition the blood flow will be from the right into the left ventricle, and the murmur will be conducted into the aortic area. In pure septal defect the direction of the blood flow is from the left into the right ventricle, consequently the murmur will be propagated to the pulmonary region. The character of the pulse is a guide to the co-existence of patent septum and pulmonary stenosis. In pure pulmonary stenosis the pulse is small, and in pure septal defect it will also be small, since a part of the blood from the left ventricle escapes by the patent septum, while in pulmonary stenosis with septal defect it will be full and powerful, since blood is driven into the aorta from both right and left ventricles. MacCallum (*Johns Hopkins Hospital Bull.*, March 1900) gives an interesting description of the specimens of cardiac malformation in the pathological museum of the Johns Hopkins Hospital. In patent septum there is generally a loud murmur beginning with systole and obscuring both sounds. It does not, however, continue during diastole, as the tricuspid and mitral flaps tend to close the orifice during that part of the cardiac cycle. The signs of pulmonary stenosis are not constant ; the pulmonary second is usually faint, but will be accentuated if there be a patent ductus. In cases of great pulmonary atresia with patent septum the position of the aorta may be so altered that it opens directly over the septal defect and communicates with both ventricles. There is no evidence that pulmonary stenosis predisposes to phthisis. Stenosis of the aorta near the orifice of a patent ductus is not very uncommon, and gives rise to fairly characteristic signs. The aorta above the stricture, the great vessels of the neck, and the pulmonary artery are widely dilated. There is seldom cyanosis, occasionally œdema; there is a variable systolic murmur over the base of the heart. The collateral circulation with the lower part of the body is carried on by the internal mammary and intercostal arteries, and in consequence the superficial vessels become tortuous and pulsate visibly. Müller (*Correspondenz-blatt f. Schweiz. Aerzte*, Aug. 1st, 1899) records the case of an infant, aged five months, suffering from general cyanosis since birth. The cardiac dulness was increased to the right; the heart sounds normal. The presence of the great cyanosis, with the absence of any murmur, led to the diagnosis of transposition of the large vessels, and this was confirmed *post-mortem*. The prognosis in such cases is very bad, fully three-quarters of the patients die within a year. Müller also describes a case of patent ductus with the following signs : No cyanosis or clubbing of the fingers; apex in the sixth space

outside the nipple line; a systolic and diastolic thrill in the second left space, faintly felt in the first and third spaces: cardiac dulness increased to left with a triangular extension upwards along the left border of the sternum; a continuous murmur beginning with systole and increasing with diastole, with its maximum intensity in the second left space, and conducted under the left clavicle.

Enema Rash in Children.—Still (*Trans. Clin. Soc.*, xxxii., 1899, p. 11) gives the following description of this condition. The rash has a fairly constant appearance, consisting of slightly raised, irregular, bright red erythematous patches, separated from each other by normal skin. There may also be smaller flat-topped papules, which coalesce to form larger ones. The distribution of the rash is almost constant, the front of the knees, the extensor aspects of the elbows, the buttocks and the face, especially about the cheeks and chin, being first affected. The eruption is symmetrical, and spreads to the trunk, but is never seen on the palms or soles. It never resembles urticaria, and itching is slight or absent. It appears from two and a half to forty-two hours after the administration of the enema, and lasts from twelve to seventy-two hours; it is not associated with either constitutional disturbance or febrile reaction. It usually follows the use of an enema of soap and water, but has no relation to the amount given, nor has the time for which the enema is retained any influence in its production. The previous state of the bowels does not seem to influence its occurrence. The eruption most commonly appears after the first enema given, and is less likely to follow subsequent ones. There is much less tendency to the production of an enema rash in children below the age of six than in older patients—from six to twelve years. The rash may be mistaken for scarlet fever, measles, or rötheln; the chief points of distinction are its distribution, the absence of constitutional disturbance, and its occurrence after an enema. Desquamation may follow it. There appear to be three possible explanations of this rash: it may be purely reflex; it may be due to toxic substances in the soap; it seems most likely that it is caused by the absorption of fæcal toxins dissolved by the enema.

Biliary Calculi in Children.—Still (*Path. Soc. Trans.*, Vol. l., 1899) records three cases in which gall-stones were found on *post-mortem* examination. The first was a girl, aged nine months, who died of broncho-pneumonia. No symptoms of colic or abdominal pain, and no jaundice, were noticed during the five and a half weeks that the child was in hospital. The

gall-bladder was filled with golden yellow bile, and on opening it, eleven small calculi were found, the smallest about the size of a pin's head, the largest measuring 2½ by 2 mm. They were angular in shape, dull black in colour, and easily friable. Three of the calculi were impacted in the common duct about 1½ cm. above the duodenal opening. The calculi were composed of bile pigment, and contained no cholesterin. The second case was a girl, aged eight months, who was admitted for cerebral symptoms of five days duration. *Post-mortem:* there was acute miliary tuberculosis; the gall-bladder was filled with yellow bile, and contained three minute calculi imbedded in some thick mucus, lying near to a superficial erosion of the mucous membrane lining its neck. The third case was a boy, aged five months, admitted for vomiting and wasting. There was occasional abdominal pain, with screaming and drawing up of the legs. *Post-mortem:* the gall-bladder was moderately full of darkish bile, and in its fundus were three small calculi, the largest measuring 3 by 2 mm. They were dingy black, friable only under considerable pressure, and were composed of bile pigment and some carbonate, but contained no cholesterin. No stones were found in the liver substance. A fourth case appeared from the clinical symptoms to be one of gall-stones. A boy, aged ten years, had suffered for some years from irregularly recurring attacks of abdominal pain, with occasional jaundice. A fluctuating swelling, thought to be the distended gall-bladder, could at one time be felt. The liver was somewhat enlarged, and harder than normal.

In addition to his own, Still has collected records of twenty cases. Ten of these twenty-three were in infants or still-born children, four occurred between the third and ninth months, and eight between the third and fourteenth months. In four cases the stones were seen in the fæces during life. Of the ten cases occurring **in newly-born children,** seven are stated to have been jaundiced, and in most of these the jaundice was present from birth. Colicky abdominal pain was present in some cases. Narrowing of the ductus choleduchus was present in one case; the gall-bladder was shrunken in another. The jaundice in these new-born infants was very intense, and in five of the cases was shown to be due to impaction of the calculi in the ducts. Gall-stones must, therefore, be reckoned among the causes of severe and persistent icterus neonatorum, which, in some cases at least, ends fatally.

In **later infancy and childhood** gall-stones have rarely been associated with any distinctive symptoms during life, jaundice and colic being reported in only one case, while in another colic alone was noted. Many of the remaining cases, however, were

in young children, in whom abdominal pain is so common as to attract little attention. Since these concretions are so much commoner in infancy than at any other period of childhood, and since, in some cases at least, their passage along the bile-ducts gives rise to pain, it is quite possible that biliary colic may be the cause of some of the screaming attacks which are so common at this time of life. As regards the etiology of the condition, the preponderance of cases in infancy is of importance, and it seems certain that most of the calculi found in newly-born children have been formed during intra-uterine life. At this period the bile is extremely viscid, and tends to stagnate in the bladder. In one of Still's cases there was a mechanical hindrance to the escape of bile from the bladder, in the shape of a narrowing of the common duct. A further cause of stagnation must exist in the muscular inactivity at this period, the contractions of the diaphragm in particular being completely in abeyance in intra-uterine life. In extra-uterine life, also, the muscular feebleness, especially in the weakly infants, in whom calculi have been found, must favour the occurrence of biliary concretions.

Diseases of the Blood.—Several cases of **acute leucocythæmia** in children have recently been recorded. Bradley's case (*N. Y. Med. Jour.*, Dec. 23rd, 1889) had a duration of eight weeks. The patient was a girl aged eight, and the first signs of ill health were anæmia, feverishness, and enlargement of the cervical glands. Ten days later the other superficial glands, as well as the liver and spleen, were found to be enlarged, and the blood count showed 1,850,000 reds, 15,000 leucocytes, and 18 per cent. of hæmoglobin. The percentages of leucocytes were: large and small lymphocytes, 97 per cent; polymorphonuclears, 3 per cent. The larger type of lymphocytes preponderated; eosinophiles were absent. Hæmorrhages from the gums and purpura appeared later. Guinon and Jolly (*Rév. mens. des mal. de l'enfance*, June 1899) report a case, also of the lymphatic type, in a girl of fifteen. The illness lasted forty days. The liver and spleen were slightly enlarged; there was no fever until the last week or two, when epistaxis, bleeding from the gums and purpura developed. The red corpuscles numbered 685,000, with 20 per cent. of hæmoglobin; the leucocytes 28,000, with over 97 per cent. of lymphocytes. There were a few eosinophiles and nucleated red corpuscles. The authors divide cases of acute leukæmia into three groups—(1) Typical forms: swollen glands, anæmia, and terminal hæmorrhages. (2) Hæmorrhagic forms: features of a hæmorrhagic purpura. (3) Pseudo-scorbutic: lesions of the mouth, gums, and tonsils predominate.

MacCrae (*Johns Hopkins Hospital Bull.*, May 1900) reports fully on a very interesting case whose duration was about a month. A boy, aged three, was admitted to hospital on account of a respiratory difficulty referable to enlarged tonsils. (Rapid increase in the size of the tonsils appears to be a not altogether uncommon symptom of the early stage of this disease.) There was also a large ecchymosis over the sacrum. It seems absolutely certain that the child was quite healthy until a day or two before admission. There was no rickets or glandular enlargement. The spleen was slightly enlarged. He gradually became more and more anæmic, his temperature rose, and hæmorrhages from the gums, as well as into the skin, and probably into the brain took place. There was no sectio. On *May 12th* the red cells were 1,680,000, the hæmoglobin 35 per cent., the leucocytes 60,500 (polymorphonuclear, 13·3 per cent., large and small lymphocytes—the latter preponderating—86·7 per cent.). Three days later the proportions were: polymorphonuclears, 4·4 per cent., lymphocytes, 95·6 per cent. *May 19th*, red corpuscles and hæmoglobin much as before; white cells, 60,000 (polymorphonuclears ·4 per cent. lymphocytes, 99·5 per cent., eosinophiles, ·1 per cent.). On *May 24th* the leucocytes had fallen to 21,800, but their proportions were practically unaltered. Had it not been for the blood examination at the first, leukæmia would never have been suspected, as there were no symptoms of serious disease. As it was, the diagnosis was at first uncertain, and the possibility of an extreme lymphocytosis was considered. A great tendency to disintegration of the lymphocytes on the stained films was noticed. The polymorphonuclears were reduced to 180 per c.mm. in the later counts. Eosinophiles were at first absent, but towards the end 60 per c.mm. were found. The red corpuscles were little altered, but the colour index was high; there were no erythroblasts. MacCrae gives notes of thirteen other cases of which he has found records. In these the leucocytes varied from 21,800 to 209,000. With the exception of one case, in which the type is uncertain, all seem to have been of the lymphatic variety. The condition is apt to be mistaken for an acute infection with marked throat symptoms, or for a hæmorrhage purpura, unless a blood examination is made.

Bertram Hunt (*Trans. Path. Soc.* 1899, p. 209) reports two cases of **Splenic Anæmia with Internal Hæmorrhages in Infants.** (1) Child aged eight months, one of twins. Spleen greatly enlarged; red corpuscles 70 per cent., hæmoglobin 28 per cent. No leucocytosis; no rickets. Illness lasted three and a half months; irregular febrile temperature, and later severe diarrhœa. Spleen weighed 7½ ozs. Microscopically there was increase of

the fibrous tissue, mainly affecting the splenic pulp, and the trabeculæ only to a less extent; the malpighian corpuscles were almost entirely replaced by fibrous connective tissue. The mesenteric glands were enlarged and bright red. The mucous membrane of the large intestine was studded with small hæmorrhages from one-sixth to one-half inch in diameter. Many of these had ulcerated. (2) Child of sixteen months, one of triplets. Markedly rachitic; spleen filled whole left half of abdomen. Liver slightly enlarged. Red cells averaged 30 per cent., hæmoglobin 25 per cent., leucocytes 1·100. Red cells varied much in size and shape; some were nucleated. Spleen weighed 4½ ozs., and had same appearance as in previous case. Between the dura and arachnoid there was a layer of extravasated blood one-third of an inch thick in places. There were no false membranes or other signs of inflammation of the dura. It is difficult to decide whether such cases are splenic anæmia or simply examples of rickety anæmia with enlarged spleen. There is nothing in the blood examination to distinguish the two conditions; indeed, in splenic anæmia the state of the blood is by no means constant. It may resemble the chlorotic type, or it may be like that of pernicious anæmia in the great reduction of red cells, the poikilocytosis, and the presence of erythroblasts, as in the second of these cases. Hunt thinks, however, that rachitic anæmia can be excluded in both his cases; in the second, although there was severe rickets, yet the size of the spleen was greater than is seen in that disease alone. Internal bleeding forms no part of the symptoms of rickets, and there was no sign of scurvy. There is a considerable difference between the microscopical appearances of the spleen in the two diseases. In splenic anæmia there is extensive fibrosis of the splenic pulp and Malpighian corpuscles, while in the enlarged spleen of rickets the fibrous increase is mainly in the trabeculæ.

Theodor (*Archiv. f. Kinderheilk.*, 1900, xxviii. 321) records a case of **pernicious anæmia** in a boy aged eleven. The symptoms and course in no way differed from the adult type. Unfortunately the corpuscles do not seem to have been enumerated. There was the usual high colour index, poikilocytosis, and polychromatophilia; the proportion of white to red cells was 1·200, eosinophiles were scanty, the blood-plates were increased. There were many nucleated reds, and the mitotic figures, as well as the irregular "framenting" nuclei, so common in many severe anæmias of childhood, seem to have been numerous. The bulk of the paper, however, is devoted to the discussion of the means by which erythroblasts get rid of their nuclei and become erythrocytes.

SURGICAL DISEASES OF CHILDREN

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Intussusception.—Intussusception is a condition which must be classed among the surgical emergencies as regards early operative interference. At present the treatment is carried out at that pernicious half-way house, where the methods employed are with one object only, the avoidance of a "cutting operation." Every practical surgeon can tell of the cases where, were he called in early to operate, success would have resulted.

In connection with this subject, the discussion at the New York Academy of Medicine, Section of Pediatrics, published in the *Archives of Surgery* for February 1900, is of more than ordinary interest. F. Krammerer read a paper in which he advocates early operative interference in all cases, and points out what has struck so many, that the use of water or gas distension is not only hazardous, but reduction in the majority of cases is incomplete, and the recurrence—so called—is not in reality a true recurrence, but due to a small unreduced portion of bowel.

Surely nothing could be more convincing than Barker's cases —which are quoted. Of fifteen there were eight on whom distension had been tried unsuccessfully; in six of these eight cases reduction was *apparent but not real.*

C. L. Gibson spoke also at this meeting as to the necessary factors in the successful treatment of intussusception, and he analysed the results of 187 acute cases. He divided the cases into reducible, irreducible, and gangrenous, and explained how the condition of the bowel depended on the duration of the complaint. In this list of 187 cases the mortality was 51 per cent., of which 30 per cent. were in reducible cases, 64 per cent. in irreducible cases, and 95 per cent. in gangrenous. Again, he points out the practical fact that on the first day the mortality was 37 per cent., on the second day 39 per cent., and six of the thirty-six operations required other operations owing to the irreducibility of the condition. On the third day the mortality was 61 per cent., and it rapidly increased on succeeding days.

Naturally, after such conclusive evidence, F. H. Wiggin spoke most strongly on the advisability of early operative interference, and it is indeed strange to read in Krammerer's paper, after such statistics, that he advises the use of forcible injection at all. It may, he says, be employed in acute cases, but only once. How much better had he said *never.*

There is no doubt that recoveries take place—occasionally—by means of injection, still in the large majority of cases the employment of such means introduces a delaying element in a condition which demands as immediate operative interference as

a strangulated hernia. How much more satisfactory it is to open an abdomen and find an easily reducible condition, than after tinkering with injections of gas, oil, mercury or water, to operate on a weaker patient with an infinitely worse condition of the bowel.

Certainly injections may be of use, but only to assist a surgeon who, after having opened the abdomen, has difficulty in reducing that very troublesome last portion, that troublesome last portion which is unreduced as a rule by injections, and produces the so-called recurrence in unoperated on cases.

It is most sincerely to be hoped that Krammerer and Gibson by their papers may assist in the deletion from future surgical text-books of that most pernicious treatment, the use of injections for the relief of intussusception. Krammerer mentions in his paper the possibilities of treatment which may be carried out when there is a condition of irreducibility, and the danger of leaving a septic gangrenous portion when an artificial anus is formed or short circuiting of bowel adopted. Certainly the resection of the intussusception by the Barker-Rydygier method which he, Krammerer, advocates, has so far shown eleven recoveries out of nineteen cases, a condition of things which may be described as very satisfactory considering the serious state of the bowel. There is one thing which the literature of the subject points to, and that is the removal of that dangerous infective area the damaged portion of intestine.

Congenital Hypertrophic Stenosis of the Pylorus.—In the *Archives of Surgery* for April 1900 Eric Pritchard takes up separately twenty-three cases all verified by *post-mortem* examination. In connection with these it is interesting to note that the onset of symptoms occurs about the 15th day, a point certainly in favour of some perverted relation between the pylorus and gastric muscular walls, so not of necessity congenital. If this, then, be the case, surely less severe methods of operation are called for than those of pylorectomy or gastro-enterostomy. W. Abel (*Munich Med. Woch.*, November 1899) records a case of recovery after gastro-enterostomy, as also does Franz Hausy (*Weiner Klin. Woch.*, 8th March 1900), still the question in this matter is not so much the success of these operations, but the percentage of mortality, no doubt terribly large. Nicoll (*Glasgow Med. Journal*, April 1900) mentions a case where the emaciation resulting from the imperfect state of nutrition caused the dilated stomach to become not only apparent, but even the peristaltic waves which crossed its surface were seen from time to time. The child was so feeble that he performed practically a Loretta's operation. The stomach was opened, and

the pylorus dilated with a pair of dressing forceps till the peritoneal coats ruptured. The result was most satisfactory, the child being in perfect health eight months after this operation. Certainly comparing gastro-enterostomy and dilatation of the pylorus for a condition most probably due to some non-organic cause, Nicoll's treatment appeals much more strongly than the serious undertaking of gastro-enterostomy in an infant.

Associated with this malady the more serious condition of congenital duodenal atresia is of interest, and is certainly more suitably named than the last. M. O. Wyss (*Beitrage Klinis. Chirur.*, April 1900) describes some cases, the first and most interesting of which was that of a child born healthy, but began soon to vomit meconium, which on examination contained the bacillus coli communis. Very little was passed per rectum, and that proved to be sterile. The child died on the 6th day, and the *post-mortem* showed a practically obliterated duodenum, with a dilated stomach and pylorus. No forcible injection of water could be made to traverse the passage from stomach to jejunum; it was practically a blind cord ½ mm. thick by 14 mm. long. The intestine beyond this cord presented the opening of the bile and pancreatic ducts. There was a certain amount of peritonitis, whether the cause—most improbable—or the result of the condition is not known.

Prolapse of the Rectum.—Cumston of Boston discusses in the *Annals of Surgery* for March 1900 the treatment of prolapse of the rectum. First of all he considers such a condition due to infection of the walls with organisms, and the pathological changes which result render the bowel lax and toneless. He recommends in the majority of cases the use of a rectal plug with attention to cleanliness, failing which there is the recommendation of longitudinal incisions in the gut with the thermo cautery—as a rule sufficient in mild cases. In aggravated cases, however, he advises excision of the prolapsed portion after the method of Mickulicz, cutting through layer after layer and ligaturing the bleeding points and not producing a previous anæmia by skewers and ligatures, because there is the danger of including a hernia into the peritoneal *cul-de-sac*. Cumston advocates the excision of a triangular piece of skin and mucous membrane at the posterior aspect of the anus, an addition which he says gives support. He does not mention whether he has tried this latter method without the excision of the intestine, and it would be interesting to find that such an operation were sufficient to control a prolapse which ordinarily would entail an operation of excision, even though it were of toneless infected bowel.

Books Received

From J. & A. Churchill, London.

SURGERY: ITS THEORY AND PRACTICE. By William Johnson Walsham, F.R.C.S. (Eng.). Seventh Edition. Price 15s.

RHEUMATISM, RHEUMATOID ARTHRITIS AND SUBCUTANEOUS NODULES. By C. O. Hawthorne, M.D., M.R.C.P. Price 2s. 6d.

THE CAUSE AND PREVENTION OF DECAY IN TEETH. By J. Sim Wallace, M.D., B.Sc., L.D.S. Price 5s.

From Cornish Brothers, Birmingham.

THE CAUSATION OF FUNCTIONAL CARDIAC MURMURS. The Bradshaw Lecture, 1899. By Arthur Foxwell, M.A., M.D. (Cantab)., F.R.C.P. Lond.

From Rebman, Limited, London.

A CONTRIBUTION TO THE STUDY OF EPIDEMIC DIARRHŒA. By Arthur Newsholme, M.D. (Lond.), F.R.C.P. (Lond.). Price 2s. 6d.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY. Under the editorial charge of George M. Gould. Two Volumes. Price 30s. complete or 17s per volume separately.

THE POCKET FORMULARY FOR THE TREATMENT OF DISEASE IN CHILDREN. By Ludwig Freyberger, M.D. Second Edition. Price 7s. 6d.

REFRACTION AND HOW TO REFRACT. By James Thorington, A.M., M.D. Price 7s. 6d.

From William F. Clay, Edinburgh.

A MANUAL OF MIDWIFERY. By W. E. Fothergill, M.A., B.Sc., M.D Second Edition. Price 9s.

From Alex. Macdougall, Glasgow.

LECTURES ON CLINICAL MEDICINE. By John Lindsay Stevens, M.D. Price 6s.

From Cassell & Company, Ltd., London.

TROPICAL DISEASES. By Patrick Manson, C.M.G., M.D., LL.D. (Aberd.). Revised and Enlarged Edition. Price 10s. 6d.

DISEASES OF THE TONGUE. By Henry T. Butlin, F.R.C.S., D.C.L., and Walter G. Spencer, M.S., M.B. (Lond). New and Revised Edition. Price 21s.

From H. K. Lewis, London.

MEDICAL ELECTRICITY. By H. Lewis Jones, M.A., M.D. Third Edition. Price 10s. 6d.

From John Wright & Co., Bristol.

OPERATIVE AND PRACTICAL SURGERY. By Thomas Carwardine, M.D. (Lond.)., F.R.C.S. Price 10s. 6d.

From Baillière, Tindall & Cox, London.

HERNIA: ITS ETIOLOGY, SYMPTOMS AND TREATMENT. By W. M'Adam Eccles, M.S. (Lond.), F.R.C.S. (Eng.). Price 7s. 6d.

ELECTRICITY IN GYNECOLOGY. By Richard J. Cowen, L.R.C.S.I., L.R.C.P.I. Price 3s. 6d.

Note on Drugs, etc.

WE have received from Messrs Mayer & Meltzer their catalogue of instruments used in the practice of Laryngology, Rhinology, and Otology. It is freely illustrated, and will serve as an aid in the selection of instruments required for this special class of work.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

THE HARVEIAN ORATION ON TRANSFUSION

Delivered to the Harveian Society of Edinburgh

By THOMAS ANNANDALE, F.R.C.S. London and Ed.,
President of the Society and Professor of Clinical Surgery in the University of Edinburgh

GENTLEMEN,—In thanking you for the honour you have done me in appointing me President of the Harveian Society for this year I would also wish to express my regret that—owing to heavy examination and other work—I have been unable to prepare a better address, and one more worthy of your kindness. I feel this the more because I am well aware of the many distinguished gentlemen who have preceded me in the presidentship and who have given such eloquent and able addresses. Under the circumstances, therefore, I must ask for your forbearance, and I will endeavour to be brief and not tedious.

It seemed to me to be appropriate to choose some subject in connection with the work of the great man whose memory we meet to-day to celebrate, and I accordingly propose to consider as concisely as possible the subject of Transfusion.

Transfusion was undoubtedly practised by the ancient Egyptians, Hebrews, and Syrians, and it is also referred to by many ancient authors including Ovid. Among those operated upon was Pope Innocent VIII. in April 1492, whose life a physician endeavoured to prolong by giving him the blood of three young men. The Pope was not relieved, and the three young men died as a result of the careless and dangerous

methods employed by the operator. In connection with to-day's proceedings it is interesting to note that it was Harvey's discovery of the circulation of the blood which suggested to Francesco Falli a method of *direct* transfusion by means of two canulas, one inserted into an artery of the giver and the other into the vein of the patient. These two canulas were united by a piece of the artery of an animal and which had a small branch passing from it to allow the escape of any air which might have entered. This method does not appear to have been employed in man and owing to prejudice and want of encouragement Falli did not continue his suggestion.

In 1665 Richard Lower, a Professor at Oxford, wrote to Dr Robert Boyle, President of the Royal Society of London, a description of the method of transfusion employed at Oxford, and this was published in the *Philosophical Transactions*, vol. i. for 1666. Having referred to this volume of *Transactions*, I find that this method consisted of introducing into an artery such as the carotid, one end of a quill, and temporarily plugging it with a piece of stick, and having opened a vein such as the internal jugular, to insert another quill and then join the two together. As a result of this communication Dr Boyle suggested to Dr Lower a consideration of certain curious and interesting queries and trials, a few of which I may record.

"Whether by this way of transfusing blood the disposition of individual animals of the same kind may not be much altered, as whether a fierce dog by being often quite new stocked with the blood of a cowardly dog may not become more tame or *vice versâ*."

"Whether those dogs who have peculiarities will have them either abolished or at least much impaired by transfusion of blood."

"What will be the operation of frequently stocking (which is feasible enough) an old and feeble dog with the blood of young ones as to liveliness, dulness, drowsiness, squeamishness, and *vice versâ*."

"Whether a small young dog being often fresh stocked with the blood of a young dog of a larger kind will grow bigger than the ordinary size of his own kind."

"Whether the operation may be successfully practised in

case the injected blood be that of an animal of another species, as of a calf into a dog, and of cold animals, as of a fish, a frog or tortoise into the vessels of a hot animal and *vice versa*."

I can find no report of the answers to these and the other queries.

This communication of Professor Lower's appears to be the first scientific publication on the subject of transfusion which continued to be occasionally practised in this country up to 1668. For many years after this, up to 1792, the procedure was little heard of in this country, but much excitement was caused in France by a sudden epidemic of the operation, which was practised on various cases, many of them quite unsuitable for it. As a result one criminal prosecution at least was raised against the operator, and the judge who tried the case declared that "in future transfusion may not be performed on a human subject without the permission of a doctor of Paris."

Between 1792 and 1818 the operation was rarely practised, but in the latter year attention was again directed to it by the experiments and successes obtained by Blundell. Since then it has been freely practised in some form or other, and Dr Rousell, from whose interesting little work I have drawn largely for my historical references, states that between 1820 and 1875 he has found records of some 200 lives which transfusion was considered to have saved.

Of these 80 were in patients suffering from hæmorrhage connected with confinements.
30 from hæmorrhage connected with wounds.
50 in diseases of the blood, including anæmia.
20 in patients suffering from typhus, cholera, etc.
10 in patients suffering from blood poisoning or asphyxia.

Since that time it is reasonable to suppose that many more hundreds of successful cases have occurred, but it is very possible that not a few of these would have recovered without the operation.

Before considering the different methods of transfusion and the fluids employed, it will be well to refer to some physiological, pathological, and practical facts, the result of more recent experiments and investigations which must be

considered of the greatest consequence in the study of the practice of this procedure.

(1) Experiments and observation have proved that blood transfused from other animals is of little value, as the red corpuscles are rapidly disintegrated and their continued hæmoglobin is very quickly excreted, and in addition such blood does not circulate satisfactorily.

(2) That in the case of *direct* transfusion the procedure should be *from vein to vein*, and that none but human blood should be so employed. Transfusion from artery to vein in the human subject is attended with too much risk to the "giver" to encourage its performance, for it necessitates the opening of an important artery with all its possible consequences.

(3) It has been proved that the transfusion of blood pure, or defibrination, has only a limited effect in supplying required nourishment or stimulant when employed for loss, or abnormal conditions of the blood. Dr W. Hunter, a distinguished graduate of our university, is of opinion that the life of the red corpuscles in blood transfused is not more than two or three days, and that during this time it is quite possible that their presence may be useful, but unless a fresh supply be constantly introduced by further transfusion they cannot have any permanent good effect upon the patient's bloodless condition.

(4) That in the case of serious loss of blood it is important that the blood vessels should be supplied with some form of fluid which will not be injurious and which will at the same time take the place of the ordinary blood and prevent their undue contraction and consequent serious effect upon the action of the heart and general circulation.

(5) It has been abundantly proved by practical experience that the transfusion of saline fluids into a vein into the rectum, or cellular tissue, with proper antiseptic precautions is, although temporary in its effects, a successful means of relieving the condition due to loss of blood.

It only now remains for me to consider the various methods of transfusion and to offer one or two practical conclusions in connection with the procedure.

As has already been explained transfusion from artery to vein in the human subject cannot be advised, so that the introduction of blood in this procedure must either be *direct*

from vein to vein, or "*indirect*" by means of a syringe or other apparatus, in the case of blood or other fluids. Whatever method be employed a very important fact must always be remembered, and it is that when blood is exposed to the air, or comes in contact with any foreign body or with the coats of a bloodvessel which are injured or diseased, coagulation may result, and the risk of introducing clots into the circulation is well known. Again, the risk of introducing air or septic organisms during the operation must always be guarded against. The introduction of a small quantity of air may not be serious but any quantity will be attended with much danger to life. The methods of transfusion as at present practised may be considered.

Under (1) Direct transfusion of blood.
(2) Indirect transfusion of pure blood, of blood specially treated, and of other fluids.
(3) Injection of blood or other fluids into the peritoneal cavity, into the rectum, or into the cellular tissues.

I think it may be well here to confine my remarks to cases in which there has been serious loss of blood from any cause.

Transfusion has been and is still employed in cases the result of abnormal conditions of the blood, such as anæmia and various forms of blood poisoning, but although cases of benefit have been recorded from time to time, it cannot be said that this procedure has as yet been established as a satisfactory means of their treatment.

The *direct* method of transfusing blood is naturally the most perfect one, but it has great disadvantages in connection with its procedure, and these are the difficulty of carrying it out under ordinary and often under sudden emergencies, and avoiding the serious risk of clotting and introduction into the patient circulation of septic matter. The very ingenious instrument of Dr Rousell proved in his hands a successful means of *direct* transfusion, but having many years ago obtained one of these instruments, I found it to be much too complicated to be used except by an experienced expert, and although I used it with some success in a few cases, I was obliged to put it aside as not being suitable under ordinary conditions and often unsatisfactory in its working. I think, therefore,

I am justified in stating that at the present time the *direct* method is—until further improvements in connection with it have been established—not a procedure which can be easily carried out and that therefore its practice is not to be recommended.

The *indirect* method may be carried out—

(1) By injection of pure blood.

(2) By pure blood with some non-coagulating fluid added.

(3) By some form of saline or other fluid.

(4) By injections into the peritoneal cavity, rectum or tissues.

1. The *indirect* method with pure blood shed from another person and injected into a patient's vein is attended with even more risks of clotting and introduction of septic matter than the *direct* method, and therefore it also cannot be advised.

2. The injection of blood carefully prepared by the addition of phosphate of soda so as to prevent its coagulation, and kept at a temperature equal to that of ordinary blood heat, is on the whole the best form of transfusion and was first suggested by Dr Braxton Hicks and Dr Barnes, and introduced into this school by Dr Cotterill, and successfully used by the late Dr John Duncan, myself and others. Although in modern times Hicks has the credit of suggesting the use of phosphate of soda to prevent coagulation, a physician of Leipzig, named Daniel, described in 1664 a method of transfusion in which he employed salts of ammonia to prevent coagulation of the blood.

My late friend and colleague, Dr John Duncan, advocated and practised with much success transfusion upon this principle, making use of the patient's own blood shed during the progress of an operation. The patient in this way receiving back some of his own blood, modified by the addition of the saline solution.

If this method of transfusion by blood and solution of phosphate of soda is carried out with strict antiseptic precautions, it is on the whole superior to simple saline injections, because the elements of the blood, although they may be short lived after their injection, do add somewhat to the efficacy of the operation.

3. Undoubtedly, the indirect transfusion of fluids other than blood, and particularly of saline solutions, is the most simple and most safe of such procedures. Milk and other

fluids have been employed, and many years ago I, at the desire of my friend Dr Muirhead, transfused several ounces of human milk into the veins of a woman suffering from pernicious anæmia. The operation was not followed by any bad result but the general condition was not relieved.

For both physiological and practical reasons it must be held that such fluids as milk should not be used in transfusion, but that saline solutions should be employed in sudden cases of emergency from loss of blood when the injection of a mixture of blood and saline solution cannot be carried out at the moment under strict antiseptic precautions. The saline solution can, of course, only act in keeping the arteries distended and active and the action of the heart going, until nature has provided a new supply of blood.

It has been stated that Christopher Wren suggested the injection of liquid medicaments, and the day may come when medicines may be injected directly into the circulation in conditions of blood poisoning or other abnormal states of the blood. But that day has not yet come.

4. Injections of blood, pure or prepared, and injections of saline solutions into the peritoneal cavity, or into the rectum or cellular tissue, have been, and are still, employed.

Although experiments have proved that when blood is injected into the peritoneal cavity, some of its red corpuscles do become absorbed, Dr W. Hunter has shown that the injection of pure blood is liable to be followed by localised peritonitis, and also that the quantity injected is too small to be of any benefit, even if some portion of it is absorbed.

The injection, therefore, of blood into the peritoneal cavity is not to be encouraged; but the injection of large quantities of warm saline solution into the cavity, into the rectum, or into the cellular tissue is of value, more especially when such fluid cannot be injected into a vein, for the rapid absorption of the fluid acts—but, of course, not so quickly—in keeping the arteries at work.

In considering the value of transfusion in saving the life of patients suffering from loss of blood, it must always be kept in mind that nature has remarkable powers of overcoming loss of blood, and all of us have met with cases where death seemed certain, but which have rallied and recovered. Transfusion

then should not be too lightly practised, and should certainly not be practised unless it can be performed quickly and with all safe precautions.

The "storing" of even a small quantity of blood in the body, as by the application of a band or tourniquet round the upper part of a limb in cases where serious loss of blood is anticipated during an operation, and then restoring the stored-up blood to the circulation by removing the constricting band is a valuable means of relieving the emptied vessels, and it has, of course, the advantage over transfusion that it is the normal blood which is circulated without any risk of clotting or introduction of septic material.

The high elevation of the limbs, especially of the lower limbs, is also useful in some cases, the blood in these limbs being allowed to drain into the general circulation, and so aid in tiding over a critical period and allow nature to manufacture a new supply of blood.

The conclusions I have come to in regard to transfusion are these—

1. That it may be a valuable aid in saving life in the case of patients suffering from serious loss of blood, provided they show no signs of reaction after the ordinary means have been carefully tried.

2. That the best form of transfusion for ordinary use is the injection of human blood mixed with a solution of phosphate of soda, and kept at a proper temperature, so as to prevent clotting.

3. That if the former method cannot be properly carried out, the injection into a vein of saline solution (chloride of sodium) is the next best procedure.

I need scarcely say that both of these procedures must be carried out with the most strict and careful antiseptic precautions.

4. That intra-peritoneal injections of warm water, or by warm saline solutions, are most likely to be useful in cases where the abdomen has already been opened, for without an opening there is always a risk of injuring the intestines or other internal organs with the trochar and canula.

5. That injections of warm water, or of warm saline solutions into the rectum, or into the cellular tissues, is a safe and simple procedure, which may be usefully employed in any sudden emergency.

CLINICAL LECTURE

ON INFLAMMATION OF THE UTERINE APPENDAGES

Delivered in the Royal Infirmary, Edinburgh

By A. H. FREELAND BARBOUR, M.D., F.R.C.P.Ed.,
Assistant Gynecological Physician to the Royal Infirmary, Edinburgh

WE have had in Ward 28 some cases of inflammation of the uterine appendages which form the subject of this clinical lecture. By the uterine appendages is meant the *ovary and Fallopian tube.* In a systematic course we distinguish between ovaritis and salpingitis, but clinically such a distinction cannot be made. When salpingitis is present we find ovaritis, and where ovaritis is we usually find salpingitis. Hence the term salpingo-ovaritis has come into use to express the association of these conditions, but it is a hybrid word. You will find the term inflammation of the uterine appendages a better one, and it also draws attention to the fact that the tissues round the tube and ovary, *i.e.* the cellular tissue of the upper part of the broad ligament and adjacent peritoneum are also implicated.

The area involved consists not only of the ovary and tube, but includes a wider "sphere of influence"—the hinterland in this case is the adjacent peritoneum and cellular tissue. The accompanying diagram represents the parts affected.

Before referring to the cases let me draw your attention to the *significance of this lesion.*

It is one that has received attention only during the last twenty years, and for the obvious reason that it was not till the days of abdominal section that it was recognised. It is interesting to note how, as the method of examining cases has extended, various lesions have come into view. So long as the gynecologist's range was limited to what he could see within the end of a speculum or feel with the finger tips on vaginal examination, inflammation of the cervix was *the* lesion. The bimanual brought deposits in the cellular tissue and peritoneum within range, and peritonitis and cellulitis were recognised. But it was not until the abdominal cavity came

to be opened frequently and looked into from above that inflammation of the uterine appendages came to have a recognised place.

These lesions have received a new significance in view of their *relation to peritonitis*; and as this is closely connected with the germ theory, we must turn aside for a moment and look at the bearing of this theory on our views of inflammation of the uterine appendages and peritonitis. This is a subject of the utmost importance and one which is bound to make itself more and more prominent. Let me try and state it briefly in

a. uterus; *b. c. g.* Fallopian tube; *e.* ovary; *f.* ovarian ligament; *l.* infundibulo pelvic ligament.

In Tait's operation the broad ligament is transfixed about *f*, and the two halves of the divided ligature tied between *b* and *l*.

so far as it is possible to see our way clearly through the confused mass of evidence which is being accumulated on the germ theory in relation to inflammation of the genital tract.

You will remember that the peritoneal cavity communicates with the external air directly, this communication being through vagina, uterus, and Fallopian tube. You might compare the genital tract in this respect to the respiratory tract. Corresponding to mouth, larynx, bronchus and lung substance, you have vagina, uterus, tube and uterine appendages—

with the adjacent peritoneum and cellular tissue. The question naturally arises, is not inflammation of the appendages and peritonitis comparable to pneumonia? May not germs be as constantly present in the genital tract as the pneumococcus is in the respiratory, all that is required to make them develop being the depression of vitality such as a chill causes?

If we could account for all pelvic inflammation on this theory we might elaborate it thus. Micro-organisms are the seed. The mucous membrane is the soil, the fertility of which is increased by whatever diminishes the vital powers. And in the subtler influences of heredity and diathesis we have the climate, which also must be taken into account when we have to consider whether seeds will germinate. Unfortunately in the case of the genital tract, we are still further from proof than in the case of the respiratory that germs are present as an essential factor in all cases of inflammation. Note, gentlemen, I say in all cases. For in the gonorrhœal, the tubercular, the acute septic, the part played by germs is established beyond dispute.

Let us look a little closer at such a comparison as this and test it critically.

In the first place it is evident that the genital tract is not kept open throughout like the respiratory. Nor is there any circulation of air over its surface. The surfaces are in apposition, and if any current is present it is a stream which would tend to wash out any germs. It is also worth noting that the first place where germs find themselves has a covering the most germ proof of any in the body. You remember that the vagina resembles skin rather than mucous membrane in its being armed with squamous epithelium arranged in several layers; and there are no joints in the armour, for the epidermal layer is not weakened by the channels of sweat or sebaceous glands.

Further, the normal vaginal secretion (*i.e.* the secretion found in the vagina) has been shown to have a distinctly germicidal action. The results of the two chief workers at this subject do not entirely agree. The names of Döderlein and of Krönig and Menge must be mentioned in this connection. Döderlein distinguishes between physiological and pathological secretions. The physiological vaginal secretion

is markedly acid and contains a vaginal bacillus which causes the acidity by producing lactic acid. Pathological secretion is feebly acid, neutral, or alkaline, and shows various micro-organisms flourishing in it. If this distinction could be drawn, the study of infection would be much simplified. The discharge becomes alkaline at the menstrual period, in the puerperium and in many cases of leucorrhœa; and thus conditions arise in the vagina favourable for the growth of micro-organisms and infection of the genital tract.

Krönig however comes to a different conclusion. He maintains that the distinction between physiological and pathological secretion does not hold. All secretions are equally germicidal. There are differences in the vitality of the germ, the staphylococcus taking twice as long to kill as the streptococcus, but a vagina becomes aseptic in two or three days. I have not time to go into the extremely interesting discussion of the cause of this germicidal action.

Menge's observations confirm those of Krönig. To determine the efficiency and rapidity of the germicidal action he introduced pyogenic organisms into the vagina in eighty cases, and found that the vagina, to use his expression, "cleansed itself from these" in periods varying from two and a half hours to three days.

Evidence is thus slowly accumulating that micro-organisms do not play so important a rôle in the etiology of inflammation in the genital tract as is suggested by such an analogy as that of the respiratory tract. It does not follow, however, that we minimise antiseptics in treatment. On the contrary, the greatest antiseptic precautions must always be used lest we introduce micro-organisms which were not there before. For example, unless the external genitals and vagina be thoroughly cleansed and aseptic instruments be used, a purulent endometritis may be induced on a simple one.

So much by way of introduction to the consideration of inflammation of the uterine appendages.

Let us look now at four illustrative cases.

1. M. W., æt. 23. Pain in back and iliac regions; worse at menstrual period. Symptoms came on a month after an acute vaginitis with urinary symptoms. Appendages palpable on left side, also utero-sacral ligaments. Under rest,

antiseptic douches, and pot. iodid., they ceased to be palpable, and uterus became movable. Pain relieved.

2. Mrs M., æt. 28. Two children, last five years ago. Menstruation irregular, sometimes every six weeks, and profuse. Tender swelling, size of orange, behind uterus, and smaller mass beside it. Tubes dilated with pus, removed on abdominal section. Recovery.

3. Mrs M., æt. 24. Menstruation profuse, lasting seven days, and painful. Ovaries and tubes palpable in both fornices. Patient markedly anæmic. As the hæmorrhage was not relieved by ergot, the appendages were removed. After operation, there was a discharge of blood for some months, and then complete amenorrhœa.

4. Mrs N., æt. 27. One child, four years ago. Has to lie up frequently at her monthly period, and has more or less pain between times, unfitting her for work. Appendages palpable and matted down. Removed by abdominal section, after which menstruation ceased and pain disappeared. Now (six years after operation) perfectly well.

One word first as to *causation*.

Case 1 is of interest as showing an obvious cause of the condition. The symptoms came on after acute vaginitis with urinary symptoms, which is always suggestive of gonorrhœa, and the whole complexion of this case justified one in coming to this diagnosis. Here you have a distinct cause. I need not remind you how the gonococcus tends to spread rapidly along the whole mucosa of the genital tract.

In the third case the history went back to an abortion which is not mentioned in the notes. You will find, however, that in the majority of cases you cannot trace the symptoms back to a definite cause as the invasion is gradual.

When the condition has developed, four *symptoms* are present to a varying extent: dysmenorrhœa, menorrhagia, pelvic pain—more or less continuous—and sterility.

Dysmenorrhœa was present in cases 1, 3, 4. The pain is often most marked just before the period. Lawson Tait, who first drew attention to the importance of inflammation of the appendages, emphasised this pre-menstrual pain. But though common, it is not diagnostic of the appendages being affected. In inquiring into dysmenorrhœa, you should note

not only the time at which the pain is felt but also the amount. You will find it very difficult to estimate the latter, as the personal equation comes in. Unless the patient has a regular occupation which pain prevents her from attending to, you have no test. I shall return to this in speaking of pain as an indication for operation.

Profuse bleeding at the period is the second symptom which is noted specially in cases 2 and 3. In this respect inflammation of the appendages contrasts with inflammation of the cellular tissue. If you get sterility and dysmenorrhœa with scanty menstruation, you are more likely to find inflammation in the utero-sacral ligaments, while, if it be profuse, the appendages will most probably be involved.

The third symptom I mentioned was *pelvic pain*, and I have designedly kept this separate from dysmenorrhœa that you may distinguish the more or less constant pain, increased on exertion, which leads to chronic invalidism, from the periodic pain which obliges a patient to lie up once a month. The cause of the pain warrants such a discrimination. The one is due to active congestion of diseased structures, the other to their displacement in movements, specially those of straining. You will often find the two associated, but it is important clinically to discriminate between them.

Why a patient with diseased appendages should often be *sterile* is self-evident. The ovary becomes bound down with adhesions, while the fimbriated end of the tube may be displaced or bound down, and the ciliated epithelium of its lumen destroyed. Case 2 had two children shortly after one another, followed by five years' sterility; while case 4 had only one child, four years previously.

As regards the *physical examination*, will you note that the normal tube cannot be felt on bimanual examination (I am speaking of an ordinary bimanual, not the special condition of a patient with very thin abdominal walls, and under chloroform), and that the ovary is recognised with difficulty. If the ovary and tube are *distinctly palpable*, it means that they are enlarged by chronic inflammation. Hence, instead of attempting to describe the feeling of an enlarged ovary or tube, I have summed up the physical examination in three of the cases by speaking of ovaries and tubes as palpable. Will you note,

however, three conditions which you can distinguish clinically in palpating the Fallopian tube. First, and most obvious, is a dilated tube, which might be compared to a sausage; then an undilated but thickened tube, which recalls a piece of whip-cord; and the tube (and ovary also) matted down by adhesions, where a feeling of resistance strikes one more than any special outline on vaginal examination.

We pass now to *treatment*, which requires fuller consideration. In selecting these cases I kept this topic specially in view. There are two lines of treatment. First, the use of the ordinary means of treating pelvic inflammation; and second, the more radical method of removing the diseased parts.

Of the four cases, you will observe that the first was treated by local treatment, apart from operation, while in 2, 3, 4, the appendages were removed by abdominal section. From the fact that only one case is given of non-operative and three of operative treatment, you must not infer that the latter is the more frequent method. If you were to turn over the ward case-book you would find case after case of inflamed appendages treated by palliative means, with only one or two treated by the more radical method. And when you consider that in the hospital we see a larger proportion of severe cases, you will understand that, while I give only one case of the first method, and discuss it shortly, it is the treatment which, in most cases, has to be followed out.

The treatment of the first case is summed up by rest, antiseptic douches, tonic aperients, and other internal remedies. As in the case of all inflamed organs, rest is of the first importance, and a moment's consideration as to the different disturbing causes will show you how this can be obtained. *Straining* is bad, therefore absence from work, and even rest in bed, may be necessary. A *loaded rectum* is bad, therefore aperients are required. *Physiological rest* is also necessary, and special care is required at the menstrual period. Vaginal tampons also favour rest by supporting an inflamed or tender ovary.

Antiseptic douches kill micro-organisms present in the vagina, and the stimulus of the douche to the pelvic circulation favours absorption. I need not remind you that vaginal douching, to be effective, must be done thoroughly.

The removal of serum from the inflamed tissues is favoured by glycerine tampons, and ichthyol has a special action in causing absorption.

Iodide of potassium and mercury will also be found useful. Ergot will of course be given where menorrhagia is prominent, and abdominal massage is sometimes of great value in lessening pelvic pain.

Bridging over the gap between the non-operative and operative cases, will you make a note of the value of *the minor operation of curetting* in certain cases of inflamed appendages. It has its rationale in the fact that, in certain cases, the inflammation here is secondary to that of the endometrium, and that by removing the diseased endometrium we cut off the source of infection of the tubes. Although I spoke of the insufficiency of the view which would account for all cases of affection of the appendages by an extension of germ infection along the surface of the mucosa, there is no doubt that this occurs in a considerable number of cases, notably those due to the gonococcus, the tubercle bacillus, and the streptococcus of acute septicæmia. These, however, make up only a small proportion of the cases of inflamed appendages. The question is, to what extent can we apply the same view to the large balance of cases left. The fact that some cases of inflamed appendages are benefited by curetting of the uterus is an argument for extending the theory, so as to include such cases.

Look now at cases 2, 3, and 4, as giving three types which were treated effectively by operation. I have arranged these cases in the order of importance.

First, a case *in which you must operate.* Where you get a tube dilated it may rupture, and if the dilated tube contain pus the patient will die of septic peritonitis. Hence dilated tubes call not only for operation, but for immediate operation. These are the clearest cases, and cases in which you can not only recommend but press operative interference.

The tube may be also dilated with serum—hydrosalpinx, or blood—hæmatosalpinx. If you suspect the latter the indication is clear for removal; and the risk of abdominal section is so slight that even supposing the dilated tube be only a hydrosalpinx which might become septic, you are fully justified in removing it.

One word here as to *operative technique*. In the removal of the appendages the broad ligament is transfixed below the ovary, and the double ligature constricts it from the isthmus of the tube to the infundibulo-pelvic ligament (see diagram). After the ligature is tied the tube and ovary are clipped off above it. Where the tube is dilated it should be removed without rupturing it as the contents, if septic, infect the peritoneal cavity.

A second indication is hæmorrhage, *i.e.* profuse menstruation, which is pulling down the patient's strength and has not yielded either to curetting or ergot. Ergot of course is always tried in the first instance. Further you may try curetting empirically. We do not suppose that you are dealing with a case in which there is a distinct indication for curetting given by the condition of the uterine mucosa, as for example where the symptoms have developed after a recent abortion. In that case curetting is not empirical.

When all other measures fail and bleeding is so considerable as to be evidently a source of danger to the patient's health, if not to life, then the appendages are removed. The rationale of treatment here is not so much to remove diseased structures as to *induce the menopause artificially*.

And the mention of the menopause suggests a point with regard to the operation which I did not refer to, namely, that you should explain to the patient and to her husband the nature and effect of the operation. And probably the best way to put it is to say that it brings on the change of life prematurely. Note that it in no way unsexes the patient. Removal of the ovaries does not seem to have the same effect on women as castration has on man. Sexual feeling is often not affected in the least. And while making it perfectly clear that menstruation will cease and the possibility of conception also, you can assure her that this is all. Slight changes may take place in the figure, the patient may take on fat, but these are only the minor changes which occur in connection with the change of life.

We come now to the fourth case, which illustrates the third and last indication, namely, pain. You will observe that the indications become less definite. A pus-tube—of that there can be no doubt for a moment. Menorrhagia—that becomes evident only after the case has been observed for some time, but

may then be definite. Pain—here is the most vague and uncertain indication. There is nothing more difficult to judge of; and you will find in practice nothing more difficult to make up your mind about than whether to recommend removal of the uterine appendages for pelvic pain.

Case 4 was a very clear one. The patient was off work for more than a week out of the month, and between times had considerable suffering. The result also was satisfactory. The patient came to see me again a week ago, six years after the operation, and I could satisfy myself that the result was permanent. In judging of the justifiability of an operation you must distinguish between recovery and cure. A patient who never 'looked over her shoulder' after an operation may in six months' time be as bad as she was before it. Looking back on the operation one cannot say that it was justifiable. Sometimes of course you may be obliged to 'give her the chance,' but that is not the therapeutic ideal. Reduction of the mortality to a minimum cannot justify any operative procedure, only a lasting cure.

A CASE OF CÆSAREAN SECTION FOLLOWED BY SUB-PERITONEAL HYSTERECTOMY

Read before the Obstetrical Society

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EARLY one morning in April 1898, I was asked by Dr Inkster to assist him at the confinement of Mrs K. Before my arrival Dr Inkster had made a prolonged effort to bring the head into the pelvis with axis-traction forceps but had failed. I reapplied the forceps and exerted as powerful traction as I thought was good for the patient, but without being able to move the head in the slightest. Being now satisfied that the child could not be born alive *per vias naturales*, we discussed whether the head should be broken up or whether we should attempt to deliver a living child by Cæsarean section. Dr Inkster and myself favoured the latter plan, but the husband could not be persuaded; so we performed basilysis, breaking up the base of the skull with

Professor Simpson's original instrument, and extracting the child by means of the blunt hook. The operation, though tedious, was successfully accomplished, and the patient made an excellent recovery.

On December 5th, 1899, the patient, acting on the advice of Dr Inkster, called on me to announce that she was again pregnant. Her last period commenced on the 22nd July, and lasted four days. She felt life on the 29th of November, and the expected time of her confinement was about the 2nd of May 1900. I had recommended that if ever she again became pregnant she should have an operation that would give her a living child, and she now expressed herself as willing to submit to such an operation provided measures would be taken to prevent a subsequent pregnancy.

She was now pregnant for the fifth time. Her first child was delivered still-born at the seventh month with forceps, the accoucher requiring to use great force. Two early miscarriages took place subsequently, and then followed the labour ended by basilysis which I have just described.

Pelvimetry gave the following measurements :—

Interspinous diameter	. .	8¾ inches.
Intercristal	„ . .	9¾ „
External conjugate diameter	.	6¼ „
Diagonal	„ „ .	3-3¼ „
True	„ „ .	2½-2¾ „

The question of the particular operation to be adopted in this case now presented itself for consideration. Symphysiotomy was out of the question because I had promised to take measures to prevent a future conception. One of the following operations might be chosen:—1. Sanger Cæsarean section; 2. Porro Cæsarean section; 3. Cæsarean section followed by panhysterectomy; 4. Cæsarean section followed by sub-peritoneal hysterectomy. I had had previous personal experience of the Porro Cæsarean operation, having performed it successfully some years ago in two cases. I had also performed panhysterectomy four times between the fourth and sixth months of pregnancy, likewise with success. This experience had taught me that these operations were straightforward and attended with no special difficulties, and that total hysterectomy during pregnancy was quite as easily performed as the Porro opera-

tion. In the first total hysterectomy which I had performed during pregnancy—a case advanced to the fourth month but complicated by a solid fibroid tumour larger than a full-time uterus—I was struck by the satisfactory nature of the operation and its results, and at the time thought that if ever I was called on to operate at term for a case presenting absolute indications, I would select total hysterectomy, after, of course, delivering the child by Cæsarean section.

I have said that I consider the technique of one method as easy as the other, but the subsequent risks of hæmorrhage and sepsis are greater after the Porro operation. No operator nowadays would treat the uterine stump extraperitoneally after the removal of fibroids; he would either remove it or cover it over with pelvic peritoneum. The same should be done during pregnancy.

I would confine the use of the Porro Cæsarean method to cases where the patient is in an exhausted state and where the operator has not proper assistance, because it is an operation which can be done very quickly.

I have no experience of the improved Cæsarean section, but I decided against it on account of the danger of subsequent gaping of the uterine wound, hæmorrhage, and peritonitis, and also because the patient is liable to all risks associated with the puerperium.

We had yet to decide between Cæsarean section followed by panhysterectomy, and Cæsarean section followed by sub-peritoneal hysterectomy.

All that has already been said in favour of the former applies to the latter. The facility of operation and subsequent risks are not greater in one than in the other, while I believe either can give the same good results. I selected the sub-peritoneal method of treating the stump simply because I have had considerable experience in this technique in removing fibroids by Kelly's side to side method, and have got to like the operation; but if I had been without this experience, I would certainly have performed panhysterectomy.

Operation.—Mrs K. came into my Home in the last week of April. On the 3rd of May we operated without waiting for the onset of labour. The following are the notes

taken by Dr Bucknell, my clinical assistant. "The abdominal incision extended from a point two inches above the umbilicus down to the symphysis pubis. Through this opening the uterus was delivered. The lower pole of the uterus was now tightly grasped by Dr Macdonald, and then an incision about four inches in length was made in a vertical direction through the upper part of the anterior wall of the uterus. This incision was enlarged by tearing. A hand was now pushed through the membranes, the child seized and quickly extracted. A considerable quantity of liquor amnii followed. After the placenta had been separated and delivered the uterus contracted firmly, so that there was no further necessity for constricting the cervix with the hands. The ovarian arteries and the vessels accompanying the round ligaments were now tied, and the broad ligaments divided. A peritoneal flap from the lower part of the uterus was pushed down along with the bladder. The uterine arteries were then secured and the body of the uterus removed. There was little or no bleeding. The mucous membrane of the cervix and also part of the muscular wall was now cut away, and the surfaces brought together with catgut sutures; then when all oozing had ceased the peritoneum was brought together over the stump and carefully sutured so as to shut the stump out of the general peritoneal cavity and place it below the peritoneum. The abdominal wound was closed with catgut in layers." The patient made an excellent recovery, the child, a healthy female, is well and thriving, and I question if there exists at the present moment a better satisfied woman than Mrs K.

THE IMPORTANCE OF ACCURATE AND DETAILED DIAGNOSIS IN ABDOMINAL CASES

By WILLIAM RUSSELL, M.D., F.R.C.P.Ed.,
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THE importance not only of accurate but of detailed diagnosis in abdominal disease is strikingly brought out in the following cases, two of which occurred in hospital practice, while the other was seen in consultation outside hospital. Personally I become more and more impressed with the necessity for such

diagnoses, and less and less an apostle of, or even a believer in, "exploratory" operations. As that term is often used and applied in practice, it seems to me to be merely a cloak for want of diagnostic skill. The operations themselves are frequently referred to as if they were quite harmless; that, alas! is but a medical fable and a surgical ideal.

Gastric ulcers with acute appendicitis simulating perforated gastric ulcer

Mrs A. S., aged 27, married, was admitted into the Royal Infirmary on Friday, 20th April 1900. She was recommended by a practitioner in the city as a case of gastric ulcer with hæmatemesis. The patient had been brought home from the country the previous day and had been seen only once by the practitioner who recommended her for admission.

Complaint.—She complained of pain in the epigastrium and between the shoulders, and vomiting of black material. These symptoms began five days before admission, namely on the preceding Sunday, the 15th April.

Family history.—This was unimportant.

Personal history.—She had a comfortable home, but her diet was unsatisfactory and included tea several times daily. She had suffered from dyspepsia for the last two years; and about this same time last year she says that she had an attack similar to the one she is at present suffering from and that it lasted for three weeks.

Present illness.—She had been in indifferent health for some time, and for four or five weeks previous to her present attack suffered from pain after food. She was, however, taking an ordinary mixed diet. She went to the country to try the effect of change of air. She was no worse than usual until the Sunday before admission. On that day she was seized, in the forenoon about two hours after breakfast, with severe pain in the stomach and a feeling of sickness which compelled her to lie down. The pain became worse, and at night she vomited, but did not notice the character of the vomited material. On Monday she was seen by two neighbouring practitioners who gave her ice, cut off all nutriment by the mouth, but appear to have given nutrient suppositories. On Tuesday the vomited matter was noticed by her to be

brown, and sometimes black. On Wednesday and Thursday the pain and vomiting continued but were less severe. She was sent to her home in Edinburgh on Thursday, and to the Royal Infirmary on Friday.

State on admission.—The patient's state on admission was noted by the resident physician. She was slightly under middle height. She lay perfectly quiet on her back; the expression was anxious and fixed; she was poorly nourished, the muscles being small, flabby, and wasted; there was moderate pallor, and a slight icteric tint on the conjunctivæ. There were dark rings under the eyes and slight malar flush. The skin was dry and cool. There was no œdema of the ankles. The pulse was 100° regular, of fair volume, feeble force, and low tension; the vessel wall was not thickened. The tongue was pointed, dry, and red with a slight central fur The temperature was 98·4° on admission and 99° at night.

Abdomen.—On inspection the abdomen was tumid and distended. It was not resistant to palpation, the walls being fairly lax. There was tenderness on light palpation all over, but it was not marked at any point and there was no special resistance at any part. It moved little with respiration, in fact it was almost motionless. No peristaltic movements were noted. Such was the history and the condition of the patient about midday on Friday. She was given ice to suck and nutrient enemata were administered.

Saturday, April 21st.—About 11 A.M. patient complained of great pain diffused over the whole abdomen with occasionally sharper pain referred to the epigastrium. The distension was slightly increased. The abdominal wall was not rigid but allowed light palpation. There was tenderness on pressure and this seemed to be most marked in the left iliac region where there was also a measure of increased resistance. The abdominal wall was almost motionless during respiration. There was pain during micturition. There was slight pain caused by the enemata. She had not vomited since admission, but she had nausea several times. The temperature in the morning had been 97·4° and was now 99·8°; the pulse was 118, regular, small, and of low tension.

I saw the patient for the first time soon after noon on this date, my attention being directed to her as a new patient who

had become worse since her admission on the previous day. I made minute inquiry into her history, and on examination found the abdomen much distended, the walls rigid all over, hyperæsthesia universal but no special tenderness in the epigastrium or over the cæcum. The lower limit of liver dulness was raised. From the condition of the abdomen it was evident that the patient was suffering from peritonitis, and I thought that the increase in suffering was probably to be explained by the wearing off of the action of sedatives administered before admission. My interpretation of the history in view of the presence of the peritonitis, was that the sudden attack of pain with hæmatemesis in the beginning of the week was due to gastric ulcer which had perforated. I did not overlook the possibility of the case being one of appendicitis, but the entire absence of any special pain, tenderness, or swelling in the region of the cæcum, or of any special rigidity in that region, led me to set that possibility aside: this decision was no doubt also in part determined by the history of gastric ulcer, and by the attack on the preceding Sunday being so suggestive of perforation of such an ulcer. I gave orders to have the patient closely watched and to call for surgical assistance if she became worse. Seeing that the illness had already lasted for six days and that the symptoms did not appear to have become materially worse than they had been for days, immediate surgical interference was contraindicated. Fomentations were applied to the abdomen and gave marked relief, the patient not complaining of pain all the afternoon. About 6 P.M., however, she was suddenly seized with severe pain referred to the umbilical region, and at the same time she retched violently and vomited about one drachm of yellowish watery material. She was given ¼ grain of morphia hypodermically. At 7.30 P.M. she was asleep; the pulse was 140, small, feeble, slightly irregular and unequal; the abdomen was more distended. At 8 P.M. the pulse was small and irregular, beating from 100 to 110 and both its volume and force had diminished; the temperature was 100·8°. The temperature at noon had been 99·8° and at 4 P.M. 100·3°. I was out of town but she was seen by one of my surgical colleagues at 9 P.M., and he came to the same diagnosis as I had arrived at eariier in the day. The evidence pointed to peritonitis from perfor-

ated gastric ulcer. The patient's condition was such that operation did not hold out much prospect of success, but he decided to give her what chance there might be. The abdomen was opened in the middle line above the umbilicus. A quantity of fœtid pus was found round the stomach and under the liver, and there was, of course, a general purulent and fœtid peritonitis. A second opening was made below the umbilicus in the hypogastrium, and by means of it the cæcal region and other parts were explored ; the pouch of Douglas and the left iliac region were full of fœtid pus, but no affection of the appendix was recognised. The peritoneum was cleansed as well as the patient's condition, which was very critical while on the operating table, would permit. She died about three hours after the operation.

Post-mortem Examination was made on 23rd April by Dr Fleming.

Body somewhat emaciated. Abdomen greenish, showing marked evidence of *post-mortem* decomposition.

Abdomen.—Incisions in abdomen mentioned. The intestines were markedly distended and a recent layer of inflamatory lymph, purulent in parts, had matted the coils together to a slight extent ; the peritonitis was general. The lower two feet of the ileum were collapsed and were in the pelvic cavity. The *appendix* was greatly swollen and was found to turn over the brim of the pelvis, the tip being in contact with the right ovary. On the posterior aspect of the appendix there was a ragged ulcer situated about 2½ inches from tip, while the total length of the appendix was 5 inches. The appendix was swollen and intensely inflamed to within 1 inch of its cæcal end, and just where the swelling commenced there were several small nodular masses inside the appendix probably fæcal in nature. The lower 2 feet of the ileum and the ovaries and the contents of the pelvis were covered with a thick layer of purulent lymph, and the ileum itself was of a purplish almost gangrenous appearance. There was a large amount of pus in the region of the stomach and especially extending along intestinal coils in right half of abdomen.

Stomach.—There were two small greyish coloured ulcers in the greater curvature of the stomach. They had sharp margins, perforated the mucous coat, and had for their base

the muscular coat. There was an extensive area of the stomach over which the mucosa was thinned but showed no pigmentation. Near the pylorus the stomach wall was thickened and covered with glairy mucous. The *duodenum* was a good deal pigmented as if from chronic catarrh.

Remarks.—This case caused me considerable chagrin, although I have no doubt that even a more complete diagnosis would not have altered the fatal termination of the case. The confirmation of the diagnosis of gastric ulcer and peritonitis was so far satisfactory; but the appendicitis, which had been the true cause of the peritonitis, had not been diagnosed, and yet had it been recognised before she came to us the issue might have been different. We failed to ascertain what diagnosis had been made by the doctors who first saw her, and it was at that early stage that a complete diagnosis was practicable. The combination of gastric ulcer and acute appendicitis is not unknown, and many cases of the latter are preceded by a history of marked gastric disturbance. These facts have to be borne in mind and acted upon when an abdominal case presents itself, otherwise serious mistakes may be made either on the side of over-estimating or under-estimating its gravity. By the time we saw this patient the history we elicited pointed so clearly to gastric trouble, and the brown and black vomit to ulcer, that the sudden pain was instinctively referred to perforation of such an ulcer, especially when viewed at from the stage at which we saw the patient when what appeared to be a subacute peritoneal inflammation was present. The absence, as has been already mentioned, of any special pain, tenderness, or rigidity in the cæcal region tended further to lead one away from the recognition of the appendicitis. It was only after the *post-mortem* examination, and on reviewing the case, that I ascertained that the introduction of the enema tube caused pain. I then realised that a rectal examination might and probably would have completed the diagnosis. One is, however, not disposed to make rectal examinations oftener than seems necessary, and yet it is a channel of investigation which often throws great light upon an abdominal case, and it ought probably to be made more use of. The absence of acute symptoms when the patient was admitted is probably to be attributed to the action of an

opiate. It is widely known that opiates mask the symptoms in abdominal cases; but I doubt if it is as generally known that in sloughing appendicitis there may be a lull in the symptoms, which is exceedingly misleading, and which lasts for several days. This lull may be attributed quite wrongly to the action of an opiate given at the outset of the illness. A full diagnosis at the stage at which we saw the patient would not have averted a fatal termination but a full diagnosis at an earlier stage might have done so.

Dyspepsia with Chronic Œsophageal Ulcer simulating Chronic Gastric Ulcer

This case was not under my continuous care and I only saw it on two occasions with the Resident Physician of one of my colleagues who was out of town. I am indebted to the Resident for some of the notes of the case. Although the record I give of the case is not detailed it is sufficient to bring out its salient points.

M. N., female, aged 26, unmarried, was admitted to the Royal Infirmary on 1st September 1898; she lived at home and was not engaged in any occupation. Her complaint was vomiting, pain in the stomach, shoulders, and across the back; and general weakness and headaches.

History.—For eight years she had suffered from her stomach. The stomach disturbance began with what she called "bilious attacks," for which she could not assign any cause. The attacks would last continuously for a few months. After this state of things had lasted for two years the "indigestion" became constant; so that she had suffered continuously for the past six years. The manifestations of the "indigestion" were pain, flatulence, heartburn, waterbrash, and acidity after food. She also suffered from giddiness. Her doctor informed her four years ago that she had ulceration of the stomach. At that time she vomited her food immediately after she took it, and had pain instantly after food; the pain lasting for about three hours. The vomited matter was often dark in colour, and she says that the motions were dark. During the last four years she had gradually become worse, and since last May she has had to live on peptonised milk, as it was the only thing that would stay down. Sometimes even it came up.

Milk and potash were vomited. Constipation had been present during her whole illness. Several sisters suffer from indigestion.

State on Admission.—She was very thin, nervous and excitable. She had no appetite but great thirst. She complained much of a sense of weakness and of headaches. Everything she took was instantly vomited. The tongue was dry. The stomach was somewhat dilated and there was a tender area just below the xiphisternum.

History after admission.—I saw the patient after she had been in hospital for nine days or so. She vomited so persistently on being given anything by the mouth that she was being nourished by means of enemata. Many drugs and applications had been used in the endeavour to stop the vomiting, but nothing had any decided influence, with the exception of thirty grain doses of chloral along with one drachm doses of bromide of potassium administered by the rectum. Even this, however, did little more than soothe her for a time. The Resident was satisfied that even nutrient enemata brought on vomiting. She necessarily became weaker and she got worn out with the recurring vomiting. The Resident was quite satisfied that there had been repeated hæmatemesis since admission, the blood being, however, altered and black in colour. The presence of a highly neurotic element constituted a factor in the case which was easily misleading, more especially as even the administration of nutriment by the rectum was frequently followed by vomiting, still the fact of the repeated appearance of altered blood in the vomit, the long continued history of gravely disordered stomach function, and the pain immediately after taking anything by the mouth were factors which could not be disregarded, and pointed clearly to chronic ulceration, which was instinctively referred to the stomach. This was the opinion I expressed at the time, and I suggested that if there was not speedy amelioration it was desirable to have the stomach opened. About a week afterwards, on September 17th, I was again asked to see the patient. Her symptoms had in no way improved, she had become still weaker, and it was evident that a fatal termination was near. An operation seemed but a forlorn hope now, still it was only fair to give her what

there was. The operation was performed on the following day, the abdomen being opened and the stomach carefully examined from the outside with the result that nothing was felt or seen which seemed to warrant opening into the viscus. While the patient was still under the anæsthetic the stomach tube was passed and the organ washed out. There seemed to be considerable difficulty in passing the tube. Not finding the stomach lesion, which was expected, was extremely disappointing, and to my mind quite inexplicable. It was hoped that the neurotic element which was present in the case might be benefited by the operation, but there was no amelioration whatever in the symptoms and the patient sank and died the following day.

Post-mortem examination.—This was made on 20th September 1898 by Dr Muir. The body was considerably emaciated and anæmic.

Abdomen.—Beyond some very slight adhesions over the front of the stomach in region of incision the peritoneum was normal.

Stomach was slightly diminished in size. It presented nothing abnormal externally. It was quite free from adhesions to adjoining viscera. On opening it, it was found to contain about half a pint of dark, almost black fluid material—altered blood—and similar material was also present in the first part of the duodenum. The mucous membrane was atrophied and somewhat anæmic, but there was no ulcer nor abrasion of the surface. The mucous membrane of the duodenum appeared healthy, and there was no lesion of any part of the intestines.

Œsophagus.—At the root of the left lung there was a mass of caseous and partly calcified bronchial glands. A hard calcareous gland had become adherent to the wall of the œsophagus, producing fibroid depression with a puckered depression. The mucous membrane was ulcerated and the calcareous material was almost bare, the surrounding mucous membrane being swollen and œdematous. This ulcer, which was about the size of threepenny piece, was evidently the source of the hæmorrhage for the œsophagus below it contained altered blood, while its mucous membrane showed a brownish to black discolouration and was partly digested, owing probably to regurgitation of stomach contents.

Remarks.—It is usually easy to be wise *after* you know,

and this case was no exception to that rule. The chronic ulcer in the œsophagus explained the symptoms, and reduced the error in diagnosis to one of localisation only. It was at least satisfactory to find that such symptoms as were exhibited by this case were not present without chronic ulcer being present; but the failure to localise it correctly was a grave failure, which led to a futile operation which did not give the patient even the chance she might have had. Had the localisation been determined aright the stomach would have been opened, the patient would have been fed through the artificial opening, and a tube would probably not have been passed down the œsophagus. Doubtless the difficulties in localising the ulcer were great. It may be that if one had seen the patient frequently, it might have been discovered that pain was caused during the process of swallowing. Another symptom was present to which sufficient importance was not attached, and that was the pains complained of in the shoulders and the centre of the back in the upper dorsal region. These pains were too readily allocated to the neurotic side of the case. Even in the light of the revelations of the *post-mortem* room it does not appear why there should have been so much pain, or why there should have been such persistent rejection of all nutriment or fluid swallowed. In fact, this symptom was so extreme that it may, I think, be fairly doubted whether matters swallowed ever reached the stomach at all and were not rather arrested in the œsophagus by spasmodic contraction in the neighbourhood of the ulcer. These are points which are suggested by the consideration of this case, and the disregard of them may in part explain the fact that œsophageal ulcer is more commonly discovered on the *post-mortem* table than recognised at the bedside.

Calculus in lower extremity of Ureter simulating Appendicitis

On Friday the 10th December 1899, about six o'clock in the morning, I was summoned by one of my medical friends in the city to see a patient with whom he had been for many hours, and who he thought was suffering from intestinal colic from obstruction. For the relief of pain hot applications had

been steadily applied, and a few small doses of chlorodyne administered, while enemata had been frequently given to try and get the bowels to move. The local applications had not given much relief, and the enemata had not induced any evacuation of the bowels.

History.—The patient was a young man of 30 years, healthy and strong. On the Wednesday, that is two days before I saw him, he had been seized with a severe pain in the abdomen, which passed off after hot fomentations had been applied. On Thursday he was at work in the forenoon, came home to his midday meal and thereafter returned to business, but the pain came on so severely that he got a cab and returned home. Rest and local fomentations again relieved him. The household retired to rest, but early in the night had to be aroused, owing to the return of the pain in a very severe form, and the doctor was sent for. The measures already indicated were adopted, but without material or lasting relief.

Examination of the patient.—There was severe pain in the abdomen, referred mainly to the region of the umbilicus; it did not shoot downwards, nor was it referred to the loin. The pain was constant but not continuously equally severe. There was and had been no vomiting or retching. There was no icteric tint of the conjunctiva. The pulse was about 60, regular, and of moderate force. There was and had been no elevation of temperature. There was no history of disturbed gastric function, and no history of prolonged constipation or of bowel irregularity. There had been no pain on micturition, and there was no desire to micturate frequently. There was said to be no blood bile or albumin in the urine, and there was no history of urinary disturbance available at the time. There was no abdominal distension. On palpation it was readily recognised that the right side of the abdomen was rigid while the left side was lax. There was no dulness in the rigid region. On careful palpation and slowly exercised deep pressure there was no pain brought out in the epigastrium, right hypochondrium, along the course of the ascending cohn, over the cæcum, nor in the loin either by direct pressure or by bimanual manipulation. The view of the case being one of intestinal obstruction did not commend itself to my judgment, although the absence of vomiting might be explained by the fact that there

was a belief in the family that inability to vomit was a family idiosyncracy. Excluding this, one's mind turned to hepatic and renal calculus, and appendicitis. Hepatic calculus was excluded by the absence of vomiting, and of pain or tenderness in the region of the gall-bladder or liver. Renal calculus, that is to say calculus in the kidney or its pelvis, was excluded by the absence of pain or tenderness on manipulation of the right kidney region and the condition of the urine. Appendicitis was not a satisfactory explanation of the symptoms, and the absence of special tenderness in the cæcal region, on the most careful manipulation, threw still greater doubt on this view. At this stage I decided to examine by the rectum : on doing so I noted that there was nothing abnormal to feel, there was no swelling ; but with my somewhat long fore-finger, as high up as it could reach, I made the patient wince every time I pressed to the right. There was no doubt about this, for the patient told me every time I touched the spot. No tenderness could be elicited by attempting to reach the spot by deep pressure from above the pubes. This discovery so far cleared matters up, but the question still remained, whether the tender spot was the tip of an inflamed appendix, or was caused by a calculus arrested in the lower extremity of the right ureter. I leant to the latter of these explanations as the more satisfactory, and recommended the continuance of fomentations, with the addition of belladonna to them, and belladonna internally, to be rapidly pushed until its physiological action became apparent. As it was quite possible that surgical interference might be required for the patient's relief, it was arranged that he should be removed to the Royal Infirmary for observation. I saw him there before noon with two of my surgical colleagues to whom I expounded my views of the nature of the case. They had been impressed with the unusual features of the case, but leant to the view that it was probably appendicitis. As however they were not prepared to negative the existence of a calculus in the lower part of the ureter, and as the patient had been considerably relieved since I saw him in the early morning, in virtue probably of the belladonna administered, it was decided to take no further steps for the present. The belladonna was continued and as the day wore on the patient got more relief

until ultimately the pain entirely disappeared. He was kept in hospital until it was assured that it was not a mere lull in the symptoms. There was no return of pain, and he was accordingly discharged. Two days afterwards he brought a small calculus which he had passed during micturition. There has been no return of the symptoms since.

Remarks.—If the two preceding cases are illustrative of futile operation due to incomplete or imperfect diagnosis, this case may be regarded as illustrative of an operation avoided by precision of diagnosis. They certainly all three illustrate the importance of my main thesis that accurate and complete diagnosis is the true line of safety and of success in abdominal cases. We are never likely to attain to this if we accept the doctrine either that diagnosis is impossible or that when there is doubt the abdomen is to be opened, and that we need not therefore trouble about detail.

A CASE OF ERYTHEMA INDURATUM SCROFULOSORUM

By DAVID S. DOUGHTY, M.D.Ed., Dalston, Cumberland

(With Plate)

MISS F., aged 20, two years ago suffered from pulmonary tuberculosis, of which there was distinct evidence, the characteristic bacilli being present in considerable numbers in the sputum. She was ordered to live as much as possible in the open air, to take as much nourishment as she could, and guaiacol carbonate and creasote internally.

Under this treatment she improved greatly; her weight increased, the cough disappeared and bacilli were no longer to be found in the sputum. In May of this year I was again called in to see her. She was in bed and complained of aching all over her body but especially in her legs, on which, she said, there were spots. Her temperature was 100·4°; her pulse somewhat quicker than usual. A careful examination of her chest failed to reveal any return of the former mischief. There was no cough and no expectoration could be got for examination.

On the lower two-thirds of the calves of her legs there were several nodules, more numerous on the left leg than on the right. These nodules were of various sizes and mostly of a purple violet colour, some darker than others. In one or two of them there was a small hole in the centre from which exuded a slight discharge. Some which were not visible to the eye could be felt under the skin.

My first impression was that I had to deal with a syphilitic lesion, still I did not think that probable.

I gave sodium salicylate in 10 grain doses every four hours till the pain and fever abated, then I gave potass iodide, 2 grains thrice daily.

Having regard to the personal history, it occurred to me that it was possibly a cutaneous manifestation of tuberculosis. Accordingly I turned up the article, Tuberculosis of the Skin, in Dr Norman Walker's "Introduction to Dermatology," and there under the heading of Erythema Induratum Scrofulosorum I found a description which seemed to exactly fit the case.

I took two photos of the left leg and sent them with a short account of the case to Dr Norman Walker, who confirmed my diagnosis.

I continued the iodide treatment for some time but with no evident benefit. The case ran a very indolent course, and when I last saw the patient, about a month ago, the nodules though less in size and colour had not entirely disappeared.

In this case there is a definite personal history of tuberculosis which does not appear to have been so in any previously recorded case. There were, also, when I first saw the patient, distinct constitutional symptoms, whether associated with the nodular eruption or entirely independent of it I am not prepared to say, but I could discover nothing else unless I put it down to that scapegoat influenza, of which there was not, to my knowledge, a case in the neighbourhood.

PLATE V.—TO ILLUSTRATE DR DOUGHTY'S CASE OF ERYTHEMA INDURATUM SCROFULOSORUM.

Public Health

ON DISINFECTION

By W. LESLIE MACKENZIE, M.A., M.D., D.P.H.,
Medical Officer of Health for the Burgh of Leith

(*Continued from page* 133)

INTERCALARY.—I. SURFACES *v.* CUBIC CONTENT.—In the first part of this paper I gave reasons for discontinuing the use of sulphur fumigation as a method of practical disinfection, I also indicated some physical considerations which appeared to me important. The chief one I should like to emphasise is that the application of a disinfectant should be reckoned not primarily by cubic space, but by superficial area. The assumption at the basis of all our practice is that room walls are retainers and possible distributers of infection. The rest of the room is air, and foul air can be changed for fresh. It follows that surfaces alone are to be considered. This needs emphasising, for the long habit of regarding disinfection as fumigation has dominated all our ways of writing about the disinfection of rooms. If we could safely blow infected dust from floors, walls, and ceilings, we should not need to discuss the sterilising of the dust retained. But this is precisely what constitutes the particular problem.

II. THE STANDARD OF DISINFECTION FOR NON-ISOLATED PATHOGENIC GERMS.—In the matter of tests, we are to be guided as much by practice in hospital as by practice in the laboratory. Few of the pathogenic organisms are exceptionally difficult to destroy; but the question arises, may we safely assume that what kills the more feebly resisting will also kill those as yet unisolated—of scarlet fever, for instance, or measles? Is there any good ground for supposing that any infection of the non-isolated group is more resistant than the bacillus of tubercle, or the spores of anthrax? Or must we, to be safe, use nothing less potent than that which will destroy *B. subtilis* and its spores? Practice is able to furnish at least a partial answer. Take the following diseases—scarlet fever, typhus fever, measles, and small-pox.

1. Such coccal organisms as have been found associated with scarlet fever have proved less resistant than *B. subtilis*. It is certain that many of the well-known disinfectants have been found sufficient to extirpate scarlet fever infection. It *is* possible to render a scarlet fever case, and *à fortiori* scarlet

fever clothing, incapable of communicating fresh infection. If it be said that the infection loses in potency towards the end of the specific history of a case, the reply is—Does it? Experience of a "tailed" series of cases—one catching fire as the other goes out—will soon make discussion of that point superfluous. What kills tubercle may be safely held to kill scarlet fever.

2. The infection of typhus fever, again (even if we accept, provisionally, Drs Porter and Barbour's diplococcus), is one of the most easily destroyed of any. If it is one of the most virulent infections, it is also one of the most vulnerable. Free exposure to the air robs the infection of its potency. Free exposure to air, however, is not possible where clothing is chronically filthy. I have found the ordinary processes—spraying with 2 per cent. formalin, steeping in izal ($\frac{1}{2}$ per cent.), in corrosive sublimate solution, etc.—sufficient. There is nothing to indicate any exceptional resistance in the specific organism of this disease. On the contrary, everything points to its feebleness outside the conditions special to its nurture.

3. With measles it is not different. The organism seems to die a rapid natural death whenever the conditions for its spread are removed.

4. Small-pox receives, naturally, very detailed attention. It is difficult to estimate how much of its decrease is due to vaccination and how much to destruction of virus. But I have not had any experience to indicate that the small-pox virus is peculiarly resistant to the action of the ordinary disinfectants. It is true I never gave it much of a chance. In disinfecting a small overcrowded, two-roomed house, I used 10 per cent. formalin; but that was not because I had any scientific ground for believing that 2 per cent. would not have been sufficient. Probably it would have been; but with extreme infections, like those of small-pox and typhus fever, one wishes to err on the safest side.

I do not wish to "whittle away" the seriousness of the non-isolated organisms; but it is legitimate to infer that, if the diseases are destroyed by the known methods of disinfection, their specific organisms are as easy to kill as those already known to us. The standards applied to the known organisms are also applicable to the known diseases due to organisms that are unknown.

To resume now the "choice of a disinfectant":

(*d*) *Corrosive Sublimate.*—This is the disinfectant used by the Municipal Disinfection Service of Paris for the sprayers. So far as I can gather, no toxic results have been reported; but when I adopted the spray for house-disinfection, I hesitated to run any risk. My hesitation has been justified by at least one

episode. Recently for the disinfection of some small-pox wards, I gave the disinfectors some powders of corrosive sublimate; each powder contained 70 grains of the sublimate and 15 grains of ammonium chloride; one powder making, with 1 gallon of water, a solution of 1 in 1000 (corrosive sublimate). The men found the spray extremely irritating; it induced vomiting in both; it affected the bronchi in one, who continued to cough for a night, and was occasionally affected to vomiting. The symptoms passed off completely in less than twenty-four hours. There was no sign of salivation afterwards. Possibly the presence of ammonium chloride may have had something to do with the toxic symptoms; but one experiment of the kind was enough. The men both preferred the formalin solution to the corrosive. I have seen similar symptoms when the same wards were *washed* with 1 in 1000 solution of corrosive sublimate. Apparently, the amount absorbed by inhalation was enough to induce squeamishness, and in one or two cases persistent vomiting. These facts would not be enough to justify the non-use of corrosive sublimate for spraying; but they certainly ought to induce great care in its use, and, since other less noxious disinfectants are available, I do not feel urged to the use of corrosive sublimate, even with its admittedly high disinfective potential.

(*e*) *Chloride of Lime and Hypochlorites.*—In the literature of the lime chlorides and hypochlorites there seems to be some discrepancy of statement. Probably this is due to the confusion of commercial names. About the disinfective efficiency of hypochlorites of lime and soda there is no discrepancy. The active ingredient is chlorine; the efficacy of the disinfectant is in direct proportion to the amount of available chlorine, and the only point for practice is—which is the least objectionable form of applying the gas to the walls, or securing its generation there? Two illustrations are enough to demonstrate efficiency: (*a*) Dr Sheridan Delépine found that "if a weak solution, made with about one part of the original chloride of lime and 100 parts of water, was applied to the walls or to any paper impregnated with tuberculous matter, thorough disinfection was obtained in a few hours. Disinfection was invariably obtained in that way, and, in fact, an exposure of a few minutes was generally sufficient, even with a weak solution like the one he had mentioned, when the layer of virulent sputum was not very thick."[1] Again, on experimenting with "hypochlorite of lime on various other germs than the tubercle bacillus," Professor Delépine "found that every germ tried was rapidly destroyed when brought into contact with a 10 per cent. or even 1 per

[1] *Journ. of San. Instit.*, vol. xviii., p. 403.

cent. solution of chloride of lime. . . . Anthrax spores placed for a few minutes in such a weak solution as that he had just mentioned were killed."[1] (In these quotations the terms "chloride of lime" and "bleaching powder" are, I presume, synonymous, and both are synonymous with "chlorinated lime." All three are names for a mixture containing chloride of calcium and hypochlorite of calcium in varying proportions. It is a pity that one precise term cannot be agreed upon.) The results recorded in Dr S. Rideal's book, and in the Maine Report, are somewhat inconstant. The inconstancy is mainly due to the inconstancy in the composition of the liquor resulting from the dissolving of chloride of lime. The liquor seems to contain chlorine in a quantity varying with the previous exposure of the chlorinated lime. If this be exposed to light or to moisture the amount of available chlorine is reduced. Consequently, to be quite reliable, the chlorinated lime must be fresh, if not freshly made. This difficulty could be easily overcome. But there are other objections to the chlorinated lime liquor—it bleaches and tarnishes. Even these are not insuperable objections; in many varieties of house and ship they are not objections at all, but they certainly take away from the general simplicity and convenience of the disinfectant. I am thinking chiefly of walls and furniture. Where clothing, sponges, and the like are in question, one objection is serious: hypochlorite or chloride of lime renders, or tends to render, these articles brittle and ready to disintegrate. The same happens with hypochlorite of soda. No doubt this disastrous effect can be avoided when the disinfective solution is very dilute, or the time of exposure is short. But, in routine disinfection, these are very serious difficulties; for usually the articles to be disinfected are not very clean, and therefore the solutions should be stronger rather than weaker; and usually the removal from the steeping tub must be left to the discretion of the lieges, and, therefore, overtime is certain to be rather the rule than the exception. On one occasion, I left two good sponges for an hour in a recommended solution of hypochlorite of soda (perhaps, as it ought to be, the solution was stronger than normal). They were beautifully bleached; they smelt wholesomely of chlorine. But when I began to use them, they came to little pieces in my hand. I have not experimented with linen, cotton or woollen articles; but from the experience of others, I gather that the same disintegration is liable to occur. In the disinfection of walls this is less an objection. Professor Delépine applied his liquids by a brush. He says that the damage to papers, etc., was less than

[1] *Journ. of San. Instit.*, vol. xviii., p. 404.

one might expect. Possibly, but other things sufficiently nearly equal, that disinfectant is best that does no damage at all. He suggests that the damage was due to the mechanical action. In that case the spray would be at once a partial preventive of damage and an adequate dispenser of the liquid. In brushing, as in spraying, the object is to get the liquid on to the organism. The mechanical action of brushing is more gross and less regular than the wind action of the sprayer, and, therefore, the spray method is preferable. The only point open to argument is—Is the mechanical effect of the spray sufficient to drive the liquid on to the organism? To this the reply is, that what blows cobwebs away is enough to blow liquid on to the cobweb dust. The spray thoroughly wets, under considerable local pressure, the surfaces exposed to it. What the hair-brush does the spray-brush—for it *is* a brush of fine threads of air and liquid—will also do (see section iii. *infra*). (*b*) An illustration from the Maine Report: "The careful work of Nissen [1] tended to confirm the value which Dr Sternberg and the Committee of the American Public Health Association had ascribed to chloride of lime. Nissen's experiments were made with pure cultures of the bacillus of typhoid [*sic*], of cholera, of anthrax, and *Staphylococcus pyogenes aureus* and *Streptococcus erysipelatis*. The micro-organisms were in bouillon with 1 per cent. of peptone and 0·5 per cent. of common salt. Typhoid bacilli were destroyed with certainty in five minutes when the bouillon contained not less than 0·12 per cent. of chloride of lime, whether the mixture was filtered or not. Cholera bacilli were always killed in five minutes, and in most cases in one minute. . . . Anthrax bacilli, without spores, were destroyed in one minute with a 0·1 per cent. solution, and streptococcus just as quickly when the bouillon contained 0·2 per cent. of chloride of lime. Solutions of chloride of lime were found to lose their disinfectant power rapidly when used on anthrax spores. This was observed even in ten, fifteen, and thirty minutes after they were prepared. . . . Nissen says that chloride of lime may be added in the form of powder to dejections at the rate of 0·5 per cent. of the volume of the matter to be disinfected; or, taking into consideration the difference in the quality of the chloride of lime, 1 per cent. may be added (1 gramme to 100 c.c.). The stool may be emptied in ten minutes after the addition of the chloride of lime." [2] (In the Maine Report chloride of lime is synonymous with hypochlorite of calcium.)

(*f*) *Lysol.*—This I take as the type of a viscid, but soluble, disinfectant. It is held to be superior to carbolic acid in disin-

[1] *Zeit für Hygiene*, viii. 62, 1890. [2] Maine Report, pp. 199, 200.

fective power. For washing of woodwork, floors, beds, etc., it is eminently suitable, being at once a soap and a disinfectant. For such purposes it should be used in hot solutions of 1 to 2 per cent. For the purposes of spraying or showering it is more suitable than the emulsions, but less suitable than the clear liquids. With its other numerous uses we are not here concerned.

(*g*) *Carbolic Acid and Common Salt.* A disinfectant so well accredited by so many various masters as carbolic acid hardly requires mention. But carbolic acid will not do everything, and to do anything it must be intelligently handled. With the anthrax spore test it fails like most others; but the range of its efficiency is wide enough for most practical purposes. For disinfecting walls by washing or rubbing, it may be sufficient; but in the practicable solutions it is certainly less reliable than the hypochlorites, or corrosive sublimate, or formaldehyde. "In a paper on the molecular conditions of aqueous solutions of disinfectants, as regards their efficiency, Dr Scheurlen states that 1 per cent. solutions of carbolic acid, or of the cresols, in water failed to destroy *Staphylococcus pyogenes aureus* in five minutes; but 1 per cent. solutions of carbolic acid, with 24 per cent. of common salt, or 1 per cent. cresol, with 12 or 13 per cent. of common salt, destroyed the same organisms in one minute. He found also that 1 per cent. carbolic acid with 12 and with 20 per cent. of common salt, and ½ per cent. as well as 1 per cent. of cresol, with 13 and again with 19 per cent. of common salt, destroyed anthrax spores in three days at latest, while these solutions without the addition of the salt had hardly the slightest effect upon the spores."[1] These are striking facts. Surgical habits have, I suspect, had a good deal to do with the uncritical belief in the high disinfective potential of carbolic acid.

(*h*) *Formaldehyde.* — The disinfective efficiency of formaldehyde it is convenient to discuss under two heads—1. Efficiency as a free gas. 2. Efficiency as a solution in water (formalin) or alcohol (holzin). The disinfective agent is always the gas, but for some reason or other the results of the free gas do not quite conform with the results of the gas in solution. The same was true of sulphurous anhydride and sulphurous acid. The precise physical and chemical reasons for this I need not speculate upon; what concerns us now is the fact of the discrepancy. A few selected facts will determine whether, for our primary purpose of room disinfection, either the free gas or the dissolved can be relied upon.

[1] Maine Report, pp. 191, 192; *Archiv für Exper. Pathol. u. Phar.*, xxxvii. 74, 1896.

1. *As a Free Gas.*—The gas has been put to very severe tests, and has come out on the whole well. Authorities are not unanimous, but very nearly so. The objective results recorded are certainly very strongly in its favour. Professor Sheridan Delépine names the following organisms as the "most convenient for testing gaseous disinfectants": *Bacillus coli communis*, *Bacillus pyocyaneus*, *Staphylococcus pyogenes aureus*, *Bacillus subtilis* (sporing), *Bacillus anthracis* (sporing), *Bacillus tuberculosis* in sputum, fresh or dry, horse-manure with highly-resistant sporing bacilli. These are to be taken in young or old cultures, in emulsions, on threads, on agar, etc. He adds: "I think a disinfectant capable of killing the six first organisms exposed to it in various states and under various conditions is, for practical purposes, a reliable disinfectant. If, in addition, it is capable of destroying the spores usually found in horse-manure, and which often can resist for half an hour the action of saturated steam at 100° C., the disinfectant may be considered as exceedingly powerful."[1] How does formaldehyde stand these tests? Thus: (1) With unimportant exceptions the *Bacillus coli communis*, *Bacillus pyocyaneus*, *Bacillus tuberculosis*, and *Staphylococcus pyogenes aureus* were killed whether in the dry or moist state, even when placed in deep narrow recesses (2 inches from the opening of tubes open only at one end, or protected by one to three layers of filter-paper, or embedded in a thick layer of sputum). (2) The spores of the *Bacillus anthracis* were killed in twelve experiments out of nineteen, made under conditions not favourable to the free access of the gas. The differences in the results seem to have been due more to certain states of the spores than to variability in the action of formic aldehyde. (3) The action on spores of the *Bacillus subtilis* was uncertain. The very highly-resisting spores of a horse-manure bacillus resembling the hay bacillus could not be killed by exposures of a practical duration. The only evidence of action was a distinct delay in their growth."[2] He adds, further, that "wood spirit of the proper quality and strength costs 10s. a gallon. . . . It is quite evident that formaldehyde is the best gaseous disinfectant we possess at the present time for objects which are liable to be damaged by damp, chlorine, dry and moist heat." Now as to quantities and time of exposure. One or two instances are enough. In three experiments with silk threads impregnated with thick emulsion of anthrax spores and kept dry in the dark for eighteen months,

[1] Some Experiments on the Disinfection of Rooms by Gaseous Formaldehyde, *Journal of State Medicine*, 1898.

[2] *Journal of State Medicine*, 1898, p. 15.

the duration of exposure was twenty-four hours; the amount of alcohol consumed was 59,000 m.; the distances of the objects from the lamp were respectively 9 feet, 6 feet, 10½ feet; the cultivating test media were respectively bouillon, agar, bouillon. The result was complete sterilisation in each case. The control experiment gave abundant growth. In five experiments with partially-dried tuberculosis sputum, the duration of experiment was twenty-four hours. The amount of alcohol consumed was 2950 m.; the distances were as in the anthrax experiments. In every case the result was complete sterilisation. For practice, the only point to decide is this: Can Professor Delépine's conditions be reproduced? This I shall discuss further on.

These striking experiments are in many ways confirmed by the work of Messrs F. C. Robinson and B. L. Bryant in their "Bacteriological Report upon Formaldehyde."[1] But their results are best discussed under methods of application. All the leading facts have been summarised by Dr A. G. Young.[2] With two or three exceptions the authorities speak in the same sense as Professor Delépine.

2. *In Solution—Formalin* (*water*), *holzin* (*alcohol*).—That the disinfective potential of formalin (that is 35 to 40 per cent. solution of formaldehyde) stands very high is now beyond dispute. Blum, Vanderlinder and Burk, and Strehl are the only investigators whose results are not favourable. But Blum admits that "weak solutions suffice to prevent fermentation with gradual destruction of the bacteria."[3] The evidence on the other side is overwhelming. Mosso and Paoletti find "that 1 part in 20,000 slows the ammoniacal fermentation of urine, and that 1 in 4000 inhibits it entirely. . . . Walter states that a solution of formalin, 1 in 10,000, prevents the growth of the bacilli of anthrax, cholera, typhoid, diphtheria, and of the *Staphylococcus pyogenes aureus*. . . . In 1 per cent. solution it kills a pure culture of almost any pathogenic micro-organisms in thirty minutes. In 3 per cent. solution it kills anthrax bacillus in fifteen minutes, and all other pathogenic micro-organisms in one minute."[4] Walter also found that fæcal matter was almost instantaneously deodorised by a 1 per cent. solution, and sterilised in ten minutes with 10 per cent. solutions. Philipp found that "with formalin anthrax bacilli were killed in fifteen minutes with a 10 per cent. solution, and anthrax spores capable of withstanding action of steam at 100° C. twelve minutes were destroyed in less than five hours with a 10 per cent. solution. With a 5 per cent. solution, diphtheria bacillus was destroyed in ten minutes, anthrax bacillus in fifteen minutes, *Staphylococcus aureus* in thirty

[1] Maine Report, 1896-97, pp. 132-169. [2] *Ibid.*, pp. 234-265. [3] *Ibid.*, p. 235.
[4] *Zeit. für Hygiene*, April 1896, summarised in *Medical Annual*, 1897, p. 40.

minutes, and anthrax spores in five hours."[1] Even some that doubt the efficiency of the free gas in dust-disinfection, acknowledge the efficiency of the solution. Thus, Professor Sims Woodhead: "From what one knew of its action in solution, there could be no doubt that formic aldehyde or formalin was an exceedingly powerful disinfectant."[2] Dr Blaxall is reported to have sterilised milk by a solution of one part formalin in 500 milk. Probably some organisms are much more susceptible to this disinfectant than others. This would explain the slight discrepancies recorded. Then, in confirmation of its disinfective potential, formalin is a powerful deodorant. Anyone that doubts this, may relieve his doubts by sprinkling a few drops of formalin in a lobby or room that smells of "cats." The "cats'" smell is almost as pervasive and persistent as musk, to which the odoriferous agent may be allied; yet, in a very short time, the odour yields before formalin. "Aronson says that formaldehyde combines readily with nearly all ill-smelling compounds, as hydrogen-sulphide, mercaptan, and ammonia, forming others that are non-offensive."[3]

These are only some striking selections from a vast mass of evidence. They are enough to justify the inference that if the pathogenic organisms are subjected for a sufficient time to a sufficiently strong solution of formalin, the result will be disinfection. The strength of solution is limited by considerations of practice. I have used for ships, and for some rooms, a 10 per cent. solution. But when this is sprayed, the operators cannot long occupy the room. When, however, rooms or forecastles are small, the operators can stand near the door; they can begin at the distal parts first, and retreat gradually. For routine purposes, I use a solution of formalin 1 part, and water 40 parts; that is, formalin 4 ounces, water 1 gallon. This, however, is qualified by one fact. To prevent the polymerisation of formaldehyde in the original formalin, I add to each gallon bottle about 5 ounces of glycerine. This prevents any precipitate. It also results in making the solution dry more slowly. This means that the gas is longer retained in the solution; for, as can easily be shown, formaldehyde is very readily absorbed by moisture, and therefore, of course, is long retained by it. This secures longer exposure of the wall dust to the action of the gas. The amount of glycerine, however, is not enough to make the sprayed walls damp for any considerable time. Since I began to use glycerinated formalin, I have had no complaint either of the precipitation of the formalde-

[1] *Centr. fiir Bak.*, xvii. 499, 1895; in Maine Report, p. 236.
[2] *Journ. of San. Instit.*, vol. xviii., p. 420.
[3] Maine Report, p. 237.

hyde or of the hyper-hygroscopic effects of the glycerine. A German observer recommends spraying with "glycero-formol" —the glycerine preventing polymerisation.

Does formaldehyde penetrate? It is important to answer this question, but it is hardly relevant to my primary topic; for penetration rather concerns clothing, mattresses, etc., than surfaces of walls and furniture, and I have shown that steam methods are the best for clothing, etc. All the same, formaldehyde does penetrate more than any other gaseous disinfectant. The vacuum principle could easily be applied to increase the penetration. It has been applied by Dr Kinyoun.

III. METHODS OF APPLYING DISINFECTANTS TO SURFACES. —So much for the efficiency of these selected disinfectants. Many others, it is unnecessary to say, might be named, and these are in no way prejudiced by anything I have said. Like those I have selected, they must go by the scientific evidence they can produce, and many of them can produce much evidence. The matter I am mainly concerned with is, given an efficient disinfectant, how shall we apply it efficiently to the surfaces of a room and of its contents? There is a long distance between the exact conditions of experiment and the rough conditions realisable within the limits of possible practice. But the distance has to be bridged, and the following are four good methods of bridging it. Personally, I prefer the last of the four, because, in my experience, I have found it best fulfil the three conditions I have found of most importance in the evolution of the disinfective organ of the public health service. The three conditions are: simplicity, rapidity, and cheapness. Its efficiency I consider equal to any of the others.

1. *Disinfection by Free Gas.* — Here I consider only the methods of applying formaldehyde. The only other gas that deserves further discussion is chlorine, and that is best applied —not as a gas, but as a solution—by brush, shower, or spray.

In all forms of disinfection by a free gas, the object is twofold; first, to disinfect the air—a useless labour; second, to disinfect the surfaces of room and furnishings. To secure the second object, it is essential to fill the cubic content of the room with the gas. To do this, it is necessary to prevent the escape of the gas by blocking of outlets. Here is the great practical difficulty. To stop the outlets even of a fairly well-built modern room, is a matter of patient and detailed labour. The major outlets — windows and fire-places—can be dealt with easily; the innumerable minute outlets only with very great difficulty. In dilapidated or ill-constructed rooms the stoppage of outlets is frequently impossible, yet such are frequently the

houses demanding most thorough disinfection. In Professor Delépine's experimental room, the necessary conditions were secured. In the rooms described by Messrs Robinson and Bryant, similar care was taken to prevent rapid dispersion of the gas. With formaldehyde, however, the rapidity of dispersion is less than with gases whose density is nearer the density of the air. Yet even with formaldehyde, the stoppage of outlets is essential to the concentration necessary for disinfection. For my own part, I consider that the stopping of outlets—or inlets—is a matter of considerable skill; it is also a matter of considerable time; it is rarely a matter of simplicity. Doubtless it *can* be done; but the doing of it adds to the bother of the disinfection. But let it be distinctly understood that to attempt formaldehyde disinfection without the stoppage of outlets, is to reduce it to the same level of farcical futility as sulphur-fumigation frequently—not, of course, always—falls to. Let us, however, assume the stopped outlets.

(*A*) *Evaporation of Formalin*—(*a*) *Sheet Evaporation.*—To hang in the room sheets soaked in formalin is a simple method, and probably may be made adequate. But there ensues a great waste of formalin, for there is left a polymeric residue. This may be re-utilised by exposure to heat, or reconverted into formaldehyde by hot water; but to the extent that it is polymerised it is for the time inert. For the disinfection of small articles or delicate fabrics, however, the sheet method is good and useful—that is, the amount of formaldehyde communicated to the fabrics is sufficient for disinfection, but for room disinfection proper it may be discarded.

(*b*) *Heat Evaporation.*—To prevent polymerisation during evaporation, several pieces of apparatus have been constructed. Trillat's is designed to evaporate, under pressure, a combination of calcium chloride and formaldehyde. In practice, the objections to his apparatus outweigh, in my opinion, its advantages. And there is evidence to prove that "the polymerisation of formalin while undergoing distillation is largely a myth."[1] "If rapidly distilled, polymerisation rarely occurs."[2] Novy has designed a vessel for such rapid distillation. "A good Bunsen burner will distil 5 ounces of formalin, the amount necessary per 1000 cubic feet, within ten or fifteen minutes. Should there be a tendency of the formalin to polymerise, it can be prevented by the addition of 5 or 10 grains of borax."[3] Definite results are not given, but they seem to have been good. Provided, therefore, the conditions are such as to insure the necessary concentration, the evaporation of formalin will give sufficient

[1] Novy, Maine Report, p. 239; *Medical News*, lxxii., p. 641, 1898.
[2] *Ibid.* [3] *Ibid.*

formaldehyde. The vaporisation of "paraform" may be mentioned under this head. It is really a repolymerisation of formaldehyde.

(*c*) *Formogenic Apparatus.*—Formaldehyde may be directly generated from methylic alcohol. The apparatus used by Professor Delépine was the Formogène Richard. Others are, the Moffat generator and Bowdoin generator, and there are still others.

Of all generators tested by the American investigators, one thing was true: "Of all the forms of apparatus tested, none of them can be relied upon to sterilise free surfaces in five hours with the amount of material advocated by their different manufacturers. . . . None of them came up to the standard claimed for them."[1]

(*d*) *Temperature, Dampness of Objects, &c.*—Temperature is of some consequence. The higher the temperature, the more rapid the disinfection. But the variation in efficacy is not great between 50° F. and 80° F. (room temperature). Dampness of walls is also of some importance. Professor Robinson says that "dampness is a disadvantage, as it absorbs more or less of the gas and holds the odour in the rooms."[2] But "Novy found that infectious material is much more readily disinfected when it is moist. Even wet spore material is thoroughly disinfected by formaldehyde, whereas such material is not affected by sulphur. He found that the walls and floor of the room to be disinfected, and whatever articles are present (previously spread out as much as possible), should be sprayed with water before exposure to formaldehyde vapour. Owing to the great solubility of formaldehyde, large vessels of water should not be kept in the room to be disinfected. When water is thus kept in the room, scarcely any odour of formalin will remain at the end of twenty hours, whereas, in the absence of such water, the odour at the end of the time mentioned will be intolerable."[3]

A reasonable deduction from these physical peculiarities of formaldehyde is that the ends of the free-gas method are well attained when the gas is dissolved up by the moisture on the walls or objects. But this is only another way of saying that a solution of the gas applied to the walls is an efficient method of disinfection. If this is so, would it not be less roundabout to squirt, or shower, or brush, or spray the solution directly on? Is it not probable that, since the solution can be first graded to a more than sufficient strength, the direct application of it to the walls will be *à fortiori* more reliable than the application of water and gas separately? In fact, the results with the free gas are a most powerful confirmation of the methods where the

[1] Maine Report, p. 153. [2] *Ibid.*, p. 242. [3] *Ibid.*, p. 242.

solution is applied directly—that is, of the brush, or shower, or spray.

Before passing to these, I may note that the results obtained when the formogenic lamps were used to fill an air-tight bag containing infected clothing were excellent. Indeed, we here have a method that, for disinfection of clothing, might become almost a perfect substitute for steam. To secure penetration, it might be possible to arrange an application of the aspiration pump. Dr Kinyoun has devised a metallic "disinfecting chamber, to which is attached a vacuum apparatus, a small boiler in which formaldehyde is generated by volatilisation from a mixture of formalin and calcium chloride, and a second small boiler from which ammonia is turned into the disinfecting chamber by the evaporation of ammonia water."[1] These appliances are still in the experimental stage, but the non-spoiling of fabrics is a strong point in their favour.

2. *Disinfection by Moist Brushing or Rubbing.* — Of the efficacy of brushing or rubbing with disinfective solutions, there is no question. Professor Delépine's results are decisive. In many towns no objection is taken to the method. But it is admitted that such a method involves the spoiling of wall papers. It is also very laborious. Except for special cases, therefore, the method seems to me loaded with disadvantages. With any of the solutions I have discussed, brushing may be made effective; the mechanical action counts for something. But, after all, the essence of the matter is the wetting of infectious material with a sufficiently strong disinfective solution. This can be done by shower or spray with sufficient mechanical force to insure thorough wetting, yet without any destruction of the paper, except when the disinfectant has chemical effects on the colour. These effects, as I have already stated, are among the disadvantages of the hypochlorites. With solutions of formalin, as I have shown elsewhere, there is no destruction of paper and no interference with colours. In very soft papers, occasionally there may be some "running"; but after four years of formalin I have not had one complaint of destroyed papers.

3. *Disinfection by Jet or Shower.*—Here again the purpose is to wet thoroughly the surfaces to be disinfected. This, like spraying, can also be done without destruction of papers. With suitable appliances, it could be made simple, rapid, and cheap. There must be a certain extravagance in the amount of liquid used, but this is no great objection. In jetting or showering with formalin, there is the double advantage of a solution and a gas. The "messing" due to the wetting of floors is, if kept short of "damages" point, an advantage; it compels the house-

[1] Maine Report, p. 239.

keeper, for the sake of comfort, to clean up. The same is true of the spray.

4. *Disinfection by Spray—(a) General Results.*—In the *Sanitary Journal* for March 1897 I gave some account of the spray method. My experience since then has confirmed me in the positions there maintained. In hospital disinfection I have used the formalin spray for over four years. In general disinfection I have used it for over three years. More than 2000 houses or rooms have been sprayed. I have ceased to keep any record of the number of hospital wards disinfected. I may state generally that the spraying included cases of typhus and enteric fevers, diphtheria, small-pox—modified, discreet, confluent, and hæmorrhagic—chicken-pox, measles, scarlet fever, erysipelas, cellulitis, and anthrax. Wards occupied for six months with scarlet fever have been sprayed and then used for measles. Wards occupied for months with measles have been sprayed and used for chicken-pox. Wards exposed for weeks to chicken-pox have been sprayed and used for measles. And so on. Diphtheria has been housed after scarlet fever, and scarlet fever after diphtheria; scarlet fever after whooping-cough, and whooping-cough after scarlet fever, the whole yielding a large variety of permutations and combinations. In houses second cases frequently occur within the incubation period; but, except in one or two cases where personal contact with a patient was proved, I have not had a recurrence of infection. In the hospital I have never had any cross-infection after spraying except once, and that was found to be due to an undiscovered case of scarlet fever still persisting after an outbreak due to a case of mixed diphtheria and scarlet fever infection. A considerable number of those double cases had been admitted, and one or two escaped observation, the evidences of diphtheria predominating. The result was that several diphtheria patients developed scarlet fever. One could not attribute the spread entirely to conveyance by nurses. Part of it was, in all probability, aërial. After a thorough disinfection, yet another case occurred, and this, as I have said, was due to an original case that had escaped observation. When this was removed and the ward again sprayed, no fresh case appeared. This outbreak showed that the patients in a ward may be rapidly infected; it also shows that isolation and disinfection are efficient to stamp out such infection. The amount due to the infected room it is impossible to specify precisely; it is equally impossible to eliminate that amount altogether. More stress may be laid on the disinfection of houses and wards infected with typhus fever, small-pox, and measles. In no case have I found recurrence except within the incubation

period. Further, I have noticed that after a scarlet fever pavilion has been some months in use, it begins to grow more or less unhealthy, even when kept as clean as hospital methods make possible, and that is *very* clean. One notices more swollen glands, more irritated eyes, more eczematous mouths and noses, more small abscesses, more slowly mending throats, and so on. In such circumstances I have shifted the whole camp, sprayed the pavilion, and in a few days reoccupied. The result has always been good. The known habits of microbic life in occupied rooms would lead us to expect nothing less. The dust on hospital walls is mainly wool from the beds. These, in a scarlet fever ward, must be regarded as the most infectious articles in the ward. Consequently, in such wards, the persistence of streptococcus or staphylococcus, in some form, is almost normal. These organisms must be kept in check. To them many of the minor ailments I have referred to are doubtless due. Under the formalin spray such ailments vanish. The pre-Listerian experiences of hospitalism are only too ready to repeat themselves; but the repetition is now inexcusable, for hospitals can be so constructed as to make cleansing and disinfection easy.

These large effects are among the best confirmations of the efficiency of any method. They are less definite in detail than the results of laboratory experiment; but they are equally impressive in the mass. I could add many other groups of facts; for example, an outbreak of measles in a scarlet fever ward (owing to an imported case), shifting of the camp, spraying, reoccupation without occurrence of fresh cases. Such isolated groups have little value by themselves. They must be taken as part of a sustained experience. When the facts are of a well-understood order, as when a surgical wound is nursed in an erysipelas ward, they fall in with the great body of experiences that form the scientific basis of aseptic surgery. More than once I have nursed a tracheotomy case in a ward sprayed after being recently occupied by an erysipelas case. Such exposures, however, have been, in my own experience, too few to found any negative proposition upon them. At the same time, every surgeon knows the susceptibility of open wounds in an erysipelas ward, and the treachery of erysipelas once it enters a surgical ward. On one occasion a surgical ward in a general hospital had somehow become infected; two or three fresh cases occurred. The ward was fumigated with sulphur, and the usual measures taken with floors and beds, but cases continued to recur. It was then sprayed, and correspondingly radical measures were taken with beds, utensils,

etc. No fresh cases occurred. Here the spraying was only a part of the general sterilisation; but it was the greatest part so far as the ward itself was concerned.

These facts, and such as these—the changes rung on infected wards, the interchange of diseases carried out as nearly as possible on the principles of aseptic surgery, the vanishing of minor ward ailments, the sweetening of houses—have combined to confirm not only the masses of evidence in favour of the high potency of formalin as a disinfectant, but also the particular method of applying it to infected areas.

(*B*) *Some Practical Points*—(*a*) *Time of Exposure.*—An important point to settle is—How long does any dust on a wall remain exposed to the disinfectant applied? If corrosive sublimate is the disinfectant used, one minute is sufficient to disinfect non-sporing germs, and five minutes, or thereby, to disinfect anthrax spores. If formalin is used, in 2 per cent. solution, I should say that at least five minutes' exposure ought to be secured; but, if possible, half an hour, or an hour, or longer. Now, with the spray, I have found as follows: *First*, a varnished wooden wall of a hospital was sprayed on a frosty day. The temperature of the ward was about 40° F. The drops of liquid remained quite visible, and on rubbing with the finger the surface was found quite moist at the end of four and a half hours. This was several times repeated. *Second*, in a hospital ward, with impervious walls, the wall remained moist for one and three-quarter hours, although the part was exposed to a mild sun shining through a window. In the shade the same wall remained moist for at least three hours. *Third*, I have made no exact observations on papered walls; but here the capillarity of the paper plays a part. The effect is the same as when a paper is soaked in a disinfectant. The rate of drying depends on the temperature and the amount of water-vapour. This, in a recently sprayed room, is necessarily great; evaporation is, consequently, slowed down, and, in every case, one may be reasonably certain that the time of exposure will not be less than half an hour to an hour. From rough observation, I am inclined to regard the time of drying as much longer. But other tests are available with formalin. For, so long as any gaseous smell remains, formalin is being given off from the walls. [Now, I have sometimes found a strong smell of formalin in a sprayed room at the end of twenty-four hours. In the hospital first-named, when the temperature was low, the disinfectors found that a ward sprayed on one afternoon was almost intolerable next forenoon—a period of eighteen hours, and this without any special effort to retain the gas. In warm rooms, where a fire

is active, the smell, intolerable at first, vanishes rapidly, but it is usually powerful even at the end of four or five hours, unless special measures have been taken to ventilate. The persistence of the smell indicates that the formalin on the walls is still active. And, with papered or sized walls, the absorption of the liquid secures its better diffusion. Spraying becomes a soaking. I should add that, with formalin, the spray acts not only as a moistener, but also as a fumigator. It applies the dissolved gas in the first instance to the most important surfaces, but, thereafter, the gas is set free to penetrate the parts that the liquid may have missed. This cannot at any time be great, for a good sprayer throws a cloud of about 5 feet by 2 or 3 feet; this soon fills a room, and every globule gives up something to the atmosphere. Thus it seems to me that, while the advantages of forced application of a strong liquid are gained, the advantages of a subsequent fumigation by formaldehyde are not lost. The delicate mobility of the spray-cloud makes it applicable to any shape of room, press, closet, wardrobe, or other combination of the inconveniences that fill the ordinary "furnished" bedroom. This point I mention because it has been maintained that the spray can be relied on only if every part is "religiously" wetted. Every part ought to be wetted; but the wetting is not, with formalin, the whole case. On one occasion I took some friends into the ambulance shed at East Pilton Hospital. The odour of formalin was so strong, that they had to withdraw. The ambulance had gone out an hour before; the driver had sprayed it, and the diffused formalin in the large well-ventilated shed was the remnant of the spraying.

(*b*) *Strength of Solutions.*—Of formalin, I use a solution of 1 in 40; that is, formalin 4 ounces, water 1 gallon. Recently, on account of the addition of glycerine, I have used a little over 4 ounces; in cases requiring special disinfection, 6, 7, 8, and 10 ounces to the gallon. On the basis of the facts already given, I consider that, with 1 in 30 to 40, there is ample margin for any reasonable variation in the time of exposure. For the other solutions the standard strengths would be—corrosive sublimate, 1 in 1000; hypochlorite of calcium or soda, 1 per cent.; lysol, 2 per cent.; carbolic acid with salt, 5 per cent.

(*c*) *Management of the Equifex Sprayers.*—I name these, because I am not familiar with the working of others. There are several little points of management that make all the difference between satisfaction and dissatisfaction in the use of the spray. Perhaps I shall be well enough within my title if I detail one or two such points.

(1) *Length of Tubes.*—For convenience of working I prefer

12-feet tubes to either 8-feet or 6-feet tubes. Doubtless the labour is somewhat increased by the increased column of water; but the adaptivity of the sprayer is also increased. Where two men work the instrument—one as the pumper and the other as the disperser—12-feet tubes increase the convenience many fold. The longer the tubes the longer the pumper may remain in one spot, and the more regularly may the disperser work. Indeed, in small rooms the pumper barely needs to change his *locus* at all. The disperser, on the other hand, finds it easier to manipulate the nozzle freely, and to direct it under beds, into drawers, under mattresses, behind doors, behind wardrobes, and so on. Where the roof is over 8 feet high, it is a great convenience to have over 8 feet of tubing to work with. Further, the longer tube secures a more equable production of the spray-cloud. As the arteries, by their elasticity acting against a frontal resistance, convert a pulsating into a non-pulsating current, so the more diffused elasticity of the longer tubes maintains a steadier pressure of air and water. This can be readily tested. If, after the air-pressure is high, the air and water stopcocks are both closed, the spray still continues for a considerable number of seconds. With the shorter tubes, the current stops in a second or two. Once more, the longer the tube, the thicker their walls should be. The thinner tubes readily form "aneurisms" under the pressure. Probably such high pressure is never needed, but it is apt to occur in practice. For the two-men system, longer and thicker tubes increase the convenience; for the one-man system, shorter tubes diminish the labour.

(2) *Adjustments.* — With the larger equifex instruments, where the air-pump is the only pump, there is usually no difficulty in adjustment. I hesitate to detail the extremely elementary mechanical directions necessary for satisfactory sprayings; I should hesitate still more had I not found them sometimes beyond the skill of intelligent, but non-mechanic, workmen. To make the sprayer work properly, it is necessary to have the rubber tubes clean, unobstructed, and properly fastened; to have the air-pump well oiled both in the piston and piston-rod (I had an apparatus seriously spoiled for want of so seeming simple a precaution); to secure that the ball-valve is acting freely; to cleanse it with benzine if necessary; to see that the tube between air-pump and cylinder is free of grease or other obstruction (benzine being here again useful); to test the patency of the air outlet and water outlet before fastening on the rubber tubes; to test separately the air-tube and water-tube after fastening; to see that the internal nipple of the air-tube is perfectly pervious (it is apt to be choked by

shreds of rubber or dirt); to examine from time to time the collared retarder of the water-tube, and to see that it is pervious; to see that the stopcocks are tight; to wash out the cylinder frequently. In the larger apparatus I have found it best to turn on the water first; then slowly to turn on the air until the necessary fineness of spray is obtained; then with slow, steady thrusts to maintain such pressure as will give the particular best "note." Every sprayer has a pitch of its own when it is at its best. The men prefer to secure this note first, and to maintain it all through the operation. Again, if the spray tends to squirt, it is occasionally because some water has passed into the air-tube. Let this be pumped clear, and a little readjustment for higher or lower levels will prevent the squirting.

With the more portable apparatus, which has two pumps, one for sucking up the water, the other for forcing in the air, adjustment is more difficult. The secret of rapid adjustment lies in the feed-pipe. The stopcock on this should be turned off until the apparatus takes up just the amount necessary to keep a constant spray. The other stopcocks should be adjusted correspondingly. I have found that the bottom nipple valve is apt to freeze on exposure in cold weather. Care is needed in thawing. I should not think of noting these trifles did I not know that they *have* given rise to difficulties. I may add that the pumping labour of the more portable spray has been found distinctly less than of the heavier, and this without impairing the extent or quality of the spray-cloud. Frequent oiling is absolutely essential in the lighter apparatus. The apparatus should be pumped empty after a day's use.

As a criticism of both appliances one may say that the heavier is needlessly heavy and clumsy; the lighter suffers from the necessity of a detached vessel for the liquid. To meet the latter point, I am adjusting a light vessel to the outside of the cylinder. Vessel and cylinder can be strapped to the pumper's leg, and thus the stability of the whole sprayer is improved.

Conclusion.—In this discussion I have attempted to be at once critical and practical; to base my opinions and inferences only upon adequately demonstrated facts; to select instances relative to the limited problem of room-disinfection; and, finally, by a sifted correlation of practices, to educe a simpler practice.

Editorial Notes and News

Passes at the Examinations of the Royal College of Physicians, Edinburgh; Royal College of Surgeons, Edinburgh; and Faculty of Physicians and Surgeons, Glasgow.

THE quarterly examinations of the above Board, held in Edinburgh, were concluded on 30th July, with the following results:—

First Examination, Four Years' Course.—Of four candidates entered the following two passed the examination:—Jessie Eleanor George, India; and Shaik Abdul Rahman, Burma.

First Examination, Five Years' Course.—Of thirty-four candidates entered the following fourteen passed the examination:—Edith Dora Grove, Walsall (with distinction); William Linton Watson, Edinburgh; Joseph van Someren Taylor, China; William Montgomery Johnston, Ireland; Henry Traill Simpson, Leith; Andrew Malachy Walsh, Waterford; Colin Garner, Preston; Arnold Hastings, Ireland; Dirk Johannes Neethling, Cape Colony; Sybil Lonie Lewis, Chester; Ernest Howard Edward Coghlan, Loughton, Staffs. (with distinction); Robert Wearing, Accrington; George Waller Meade, Cork; and Mohomed Ashruff, Hyderabad; and six passed in Physics, and six in Elementary Biology.

Second Examination, Four Years' Course.—Of thirteen candidates entered the following five passed the examination:—William Anderson, Belfast; Thomas Arthur Fall, Portrush; John Buckner, Aberdeen; Elisha Preston Mead, Whitby; and John Lang Niven, Shanghai; and two passed in Anatomy, two in Physiology, and one in Materia Medica.

Second Examination, Five Years' Course.—Of thirty-two candidates entered the following eighteen passed the examination:—Sydney Herbert Allen, Melbourne; Frank Edward M'Gee, Melbourne; William Joseph O'Sullivan, Cork; Thomas John Walsh, Kilkenny (with distinction); Wilfred Edwyne Knight, Dublin; Adam Wilson Hall, Edinburgh; John Searle Burton, Guernsey; Charles Stuart Macaskie, Bamburgh (with distinction); Tom Bragg, Whitehaven (with distinction); Mary Lucinda Calderwood, Cumberland; John Mulvihill Gerety, Co. Longford; David Christie, Glasgow; Peter Oswald Jollie, Leslie; Fritz George Heyer, Australia; John Gilbert Heathcote, Manchester; Walter Paton Scott, Glasgow; Alan Leslie Fielding, India; and Lionel Walpole Thomson, India.

Third Examination, Five Years' Course.—Of thirty candidates entered the following nineteen passed the examination:—Lewis Beesly, London; Harold Weston Young, London; Charles

Wilfred Coghlan, Stafford; William James Noble Todd, Edinburgh; Michael Bernard Conroy, Co. Galway; Joseph Robert Sutton, Cork; Robert Stratford Stephens, Dublin; Anne Low Venters, Greenock; Thomas Sargent Pearse, New Zealand; Hubert Astley Knight, Dublin; Philip Gray Marshall, London; Catharine Frances Marianne Leach, New Zealand; Clara Hind, Nottingham; Martin Francis Cusack, Co. Cork; Frederic John Scrimgeour, Newport-on-Tay; Robert Douglas Argyll Douglas, Cape Town; May Thomson, Edinburgh; Robert Bathgate Johnston, Glasgow (with distinction); and Percy Howe, Denton; and two passed in Materia Medica.

Final Examination.—Of sixty-one candidates entered the following thirty-six passed the examination, and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P. and S.G.:—James Alexander Chisholm, Aberdeen; Alexander Sharp, Keith; John Levi Bradley, M.D., C.M., Canada; Arthur Copley Long Fox, M.D., C.M., Canada; William Christopher Brown, Runcorn; William Mitchell Browne, Londonderry; Katherine Elizabeth Gregg, Gloucestershire; Frederick William Edward Courtenay, Newcastle-on-Tyne; Frederick William Newcombe, Victoria; Henry Martyn Newton, India; Thomas M'Donagh, Galway; Harold John Pickering, Harrold; Thomas Stang, Norway; Estelle Maud Cole, Aden; Maynard Varey, York; William Lock, Edinburgh; George Robertson, Dunfermline (with honours); Bejanji Dosobhai Doctor, Bombay; Philip Theophilus Alexander Vilain, Trinidad; Charles Stevenson Oliver, Northumberland; Archibald Dods, Dalkeith; Bhagvansing Gajsing Advani, Sind, India; William Donovan, Co. Cork; Henry Noel Nelthorpe Dodd, London; Phirozshah Kharshedji Kanga, Bombay; Desiderio Fialho, Bombay; Harry Dudley Vaillant, Rangoon; James Charles Hamilton, Perthshire; John Flanagan, Castlerea; William Hudson Marsden, Melbourne; George Ellis Cook, M.B., Morrisburgh; Montague Vaughan M'Kechnie, Darlington; Dejoces Edward Pereira, Goa, India; William James Healy, Cooranbong, N.S.W.; Benjamin Gouring, Salisbury; and Ernest Alexander Bardsley, Sydney; and two passed in the division of Medicine and Therapeutics, three in Midwifery, and three in Medical Jurisprudence.

EDINBURGH UNIVERSITY—*Passes at the Professional Examinations.*—The following is the official list of passes at the recent first, second, and third professional examinations in Edinburgh University for Degrees in Medicine and Surgery:—

First Professional—M. I. Ali Khan, John Allan, D. I. Anderson, C. T. Ayana, E. A. Aylward, J. W. H. Babington, R. B. Barnetson, J. R. Bartholomew, W. J. Basson, Benjamin Baty, W.

P. Beattie, D. W. Boswell, F. T. Bowerbank, F. R. Bremner, M.A., David Brown, W. S. Murdoch Brown, L. G. Bruce, G. L. Brunton, Mary T. Cameron, T. F. Campbell, T. E. Carlyle, V. T. Carruthers, Mildred M. L. Cathels, R. A. Chapman, W. P. Chrystall, D. M. C. Church, Lizzie M. S. Clark, John Clarke, M. L. Cohen, B.A., A. G. Coullie, T. E. Coulson, James Craw (with distinction); G. A. Davies, Robert Donaldson, M.A., S. E. Douglas, C. E. Dumanoire, E. J. Elliot, Hugh Ferguson, J. M. R. Flament, W. H. Forsyth, W. J. Fraser, N. J. H. Gavin, H. V. Goldstein, Eleanor A. Gorrie, Percy Gosnold, B.A., Thomas Gowans, J. M. Graham, William Grant, W. W. Greer, E. J. Griffiths, Elizabeth C. Gunn, T. M. Guthrie, P. A. Harry, A. W. Hogg, M. A. Huk, M. M. Huk, J. H. Hume, K. U. A. Inniss, Ada Jackson, John Jardine, William Jarvis, J. M. Johnson, J. H. H. Joubert, G. P. Joy, S. F. Jung, G. F. S. Landon, F. E. Larkins, S. W. S. Leary, A. G. Leitch, A. J. Lewis, C. W. Lewis, B.A., James Lochhead, M.A., D. H. C. M'Arthur, S. A. M'Lintock, William M'Conaghy, J. S. MacDonald, J. W. M'Ewan, J. P. M'Gowan, M.A., H. R. Macintyre, James Mackenzie, Amy M. Mackintosh, William MacLaren, Neil M'Leod, Alexander MacRae, M. M. Mamourian, L. S. Milne, K. A. Moody-Stuart, W. M. Munby, D. S. Murray, A. W. Neill, C. D. O'Neal, Armand Pampellonne, Bernard Pickering, Florence M. S. Price, D. S. R. Rao, H. S. Reid, Margaret H. Robertson, Thomas Robertson, Joseph Robinson, B.Sc., S. C. Roy, C. S. Ryles, A. I. Shepheard-Walwyn, F. R. Sinton, L. H. Skene, C. J. Smith, E. H. Smith, G. M. Smith, R. A. L. van Someren, Patrick Steele, George Stewart, H. M. Thompson, Archibald Todrick, Rose C. Townend, Caroline Twigge, G. H. Ussher, F. L. de Verteuil, William Waddell, Thomas Walsh, R. H. Watt, W. H. Welsh, D. W. Wilton, W. B. Wishart, Thomas Wright, Margaret C. W. Young, M.A.

Second Professional.—Farhat Ali, W. L. L. Alston, Lewis Anderson, W. W. Anderson, R. G. Archibald, James Arthur, Nina H. Beath, Constance A. Bennet, J. G. Briggs, W. A. Brown, G. G. Buchanan, W. C. Burton, E. E. Cassaday, R. V. Clark, M.A., Maurice Davies, A. R. Douglas, C. B. Drew, Percy El-Karey, John Fairbairn, A. B. Flett, Agnes J. Gardner, P. E. H. Guiseppi, W. L. M. Goldie, R. G. Gordon Philip Hallam, D. J. Hamman, Frances M. Harper, A. O. Hooper, William Hume, John Hunter, Arthur Hutley, Bertha Jex-Blake, Saiduzzafar Khan, E. A. King, W. E. Knight, Hermann Kramer, Vivian Langmore, Abraham Leach, Duncan Lorimer, A. W. B. Loudon, W. F. Macdonald, Daniel Mackinnon, S. W. Maclean, J. J. M'Millan, E. L. Meynell, R. C. Monnington, A. E. Morton, E. J. Morton, P. H. Mules, R. S. Munro, Frank O'Neill, Sophie

Palmer, Herdman Porter, E. C. Prichard, Agnes M. Pringle, A. M. Price, A. F. H. Rabagliati, J. J. Redhead, E. M. Reece, R. E. Russell, C. W. V. Rutherford, David Sandler, Meurice Sinclair, G. W. R. Skeen, G. D. Sloan, D. W. Standley, Elbert Steyn, G. C. Trotter, Philip Vickers, J. F. van de S. de Villiers, John Wallace (B.Sc.), George Wight, E. E. Wood.

Third Professional—D. M. Aitken, M.A.; R. V. C. Ash, J. W. Barrack, E. S. Brett, D. G. Carmichael, A. W. S. Christie, R. V. Clark, M.A.; H. L. Clift, W. I. Dunn, O. J. Evans, A. H. Firth, G. A. Forrest, Robert Hamilton, P. J. Hay, John Jamieson, G. A. Jolly, E. W. Lewis, C. H. Lindsay, Samuel Lyle, Harriet E. M'Cloghry, H. K. Macdonald, Wilfrid M'Farlane, N. F. MacHardy, George M'Neill, Thomas Mill, Robert Morison, William Murray, J. G. Peebles, E. T. Potts, L. T. Price, F. L. Rigby, J. S. E. Robertson, A. L. Roxburgh, G. W. R. Skeen, C. W. Somerville, B. A. Spence, C. S. Stevenson, I. S. Stewart, G. C. Strathairn, John Sullivan, H. P. Thomson, E. J. Tyrell, A. G. Waugh, Ada Wilkinson.

Royal College of Surgeons, Edinburgh

THE following gentlemen, having passed the requisite examinations, were at a meeting of the College, held on 24th ult., admitted Fellows of the College:—Ernest Dykes Bower, M.R.C.S.Eng., Gloucester; Leslie Frank Bucknell, L.R.C.S.E., Edinburgh; Robert Grieve, M.D., Hull; Vincent Edward Nazareth, L.R.C.S.E., India; Arthur Henry Havens Sinclair, M.D., Edinburgh; Henry John Mackeson Wylbys, L.R.C.S.E., Great Yarmouth.

New Books and New Editions

On Neuroma and Neuro-Fibromatosis. By ALEXIS THOMSON, F.R.C.S.E., Surgeon to the Deaconess Hospital, Assistant Surgeon to the Royal Infirmary, Edinburgh, x. + 168 pp. 4to, with 20 Plates.

WE owe a debt of gratitude to Mr Alexis Thomson for giving to the medical world an able and carefully planned monograph which includes notes of an unusually large number of cases actually seen and examined by the author himself. It certainly seems to us to be regretted that the title "Neuro-Fibromatosis" had not been adhered to alone, and the scope of the book limited to that subject because to it the strength of the writer is devoted; but on the other hand the author's views on

classification might under these circumstances have been omitted.

An introductory chapter chiefly reviews many earlier papers and descriptions of neuromata, explains the confusion which has reigned and still reigns as to the classification of cases, and concludes with a proposed scheme for reducing order out of the existing chaos. Much can be said in favour of the author's classification, but in sweeping aside the opinions of Virchow we are asked to limit true neuromata to tumours actually containing nerve cells as well as nerve fibres—in other words—new neurons. While we are bound to admit that Mr Alexis Thomson gets rid of much confusion by so doing, should we include under false neuromata tumours formed almost entirely of nerve fibres, no doubt by division, and which may, as they sometimes do, contain no undue proportion of connective tissue? Tumours consisting of neurons—cell and axis cylinder process—must be and are very rare, and the most careful microscopic examination would be necessary before the acceptance even of apparently authentic cases is possible. If we refer to the chapter on amputation neuromata, Mr Thomson's adoption of Kennedy's theory that new axis cylinders can develop from the nuclei of the neurilemma, nuclei of envelope cells which have no direct connection at all with the axis cylinders and myelin sheaths they surround, puts him in the position of refusing to admit any but neuron tumours as true neuromata and yet still admitting that new axis cylinder processes can develop from cells akin to connective tissue. We must, however, acknowledge that Mr Thomson's scheme is workable and avoids the confusion of Virchow's definition of true and false neuromata.

A brief chapter on true neuromata (*i.e.* with nerve cells) follows, and Knauss' well known case is quoted at some length.

False neuromata are then described in detail and the third chapter deals with solitary or circumscribed neuromata simple and malignant, with an admirable and concise account of the symptoms and signs together with a number of most interesting cases from the author's personal observation.

Neuro-fibromatosis is introduced by one of the best and most incisive descriptions we have ever read upon this complicated subject. The six sub-divisions:

(1) Multiple neuro-fibroma—generalised neuro-fibromatosis.
(2) Plexiform neuro-fibroma—plexiform neuro-fibromatosis.
(3) Molluscum fibrosum—cutaneous neuro-fibromatosis.
(4) Elephantiasis neuromatosa.
(5) Pigmentations of the skin associated with neuro-fibromatosis.

(6) "Secondary malignant neuroma," being the sarcomatous development of one or other form of neuro-fibromatosis; are made the groundwork for discussing neuro-fibromatosis in detail. All these with the exception of the 5th are different varieties of the condition, while the 5th, pigmentation, is merely an adjunct of one or other form and in no sense a separate class.

Mr Thomson gives us a careful and most interesting account of (1) multiple neuro-fibromata. He considers that the newly formed tissue is made up of spindle-shaped cells, the long fibrilar branches of which anastomose freely. The tissue is generally looser at first and later becomes more dense. There are lymphocytes and small round cells in the meshes of the network, the latter are described as being about the size of a red blood corpuscle with a small round nucleus and granular protoplasm. This fibromatosis is found inside the perineurium, sometimes surrounding the nerve fibres and often more marked at one side than the other. It is therefore an affection of the endoneurium, although the perineurium may also suffer, and sometimes even the epineurium. This newly formed tissue is vascular and is well supplied with lymph.

As regards the fate of the nerve fibres of the affected funiculi, the author inclines to the view that degeneration does occasionally occur as well as mere mechanical displacement, but he considers it of little importance. A number of excellent plates of specimens taken from the author's own cases illustrate some of these points, and much stress is laid on the wavy appearance of the nerve fibres, which is greatly in excess of that met with so commonly in longitudinal sections of normal nerves which have been fixed without stretching.

A carefully prepared sketch of the distribution of multiple neuro-fibromatosis is also given.

Of even greater interest is the section on (2) plexiform neuro-fibromata. These tumours are made up of a fibromatosis of the nerves in a circumscribed area of skin, a fibromatosis involving the endoneurium especially, and only leading to a greater degree of disassociation of the nerve fibres than multiple neuro-fibromatosis, and to this is linked on the fourth subdivision Elephantiasis Neuromatosa, which differs in having over and above the extreme neuro-fibromatosis, a fibromatosis of subcutaneous and cutaneous tissues. The third sub-division or (3) cutaneous neuro-fibromata is shown to be also closely related to plexiform neuro-fibromata, inasmuch as in it very localised fibromatosis of cutaneous nerves occur, and the author's description is a *resûmé* of that given by von Recklinghausen whose cases he quotes.

A tabular account of seventy-seven recorded cases of neuro-

fibromatosis is given and bears testimony to the care with which the monograph has been prepared.

An instructive chapter on the pathology of neuro-fibromatosis brings out the following points: that it generally develops before puberty, that in a number of cases there is a strong hereditary element present, that occasionally mental and other defects are met with, and that pressure and similar factors may accelerate if not cause the disease. No fresh theory is promulgated, and the author accepts Bruns' view that it is a localised giantism.

To the practitioner no part of the volume will be found of so much value as that dealing with the clinical features of neuro-fibromatosis, concluding with a few remarks on diagnosis and treatment. The subject is discussed in a masterly manner, and the distinctive features of the varieties already referred to are most accurately and clearly described. Full descriptions of the cases seen by the author are appended.

The chapter on amputation neuromata is the only disappointing part of the book. Statements open to obvious objections are accepted, such as that the bulbous end of a divided nerve contains a dense plexus of *young* nerve fibres, that the old axis cylinders in the central end degenerate, and Kennedy's theory that new axis cylinders develop from the segmental nuclei of the neurilemma in both the central and peripheral ends of a divided nerve.

There is no question that a divided axis cylinder can grow, and that at a rate which is almost incredible; and if so, may the so-called plexus not be the baulked efforts of the *old* axis cylinders to join on to the peripheral end of the nerve? But supposing young axis cylinder processes develop, how far upwards do the old nerve fibres degenerate? We have no hesitation in asserting that the bulk of the old nerve fibres in the central end do not degenerate at all, but that, as von Bungner asserts, old axis cylinders can and may at their divided ends divide and form two or more young axis cylinder processes. The formation of young axis cylinder processes has never been proved to occur in the peripheral end of the divided nerve, and if Mr Thomson accepts this theory, his plea for the limitation of true neuromata is imperilled, because there are no nerve-cells in the ordinary sense of the term in the peripheral end of a divided sensori-motor nerve. We also take exception to the adoption of the theory that axis cylinders, integral parts of the neurons, can develop from the nuclei of their envelope cells, and the assertion that it is the one most generally accepted by physiologists.

An interesting statement is made as to the effect of antiseptic surgery in reducing the number of painful stumps. Bacteria either cause a larger bulbous nerve-ending from

irritation, or as the result of destruction of nerve tissues, they may cause the opposite effect—atrophy. It seems to us that possibly antiseptic surgery, by inducing rapid healing of the tissues in the flap or flaps, may speedily obstruct the further growth of the nerve fibres, and thus prevent the bulbous nerve-ending from reaching that part of the stump most pressed on by artificial limbs.

While it is difficult to avoid criticising what is, after all, a very unimportant chapter of Mr Thomson's book, we feel that the monograph is a most valuable addition to the literature of the subject, and will repay the perusal, not merely of the specialist, but of every physician and surgeon.

The illustrations are extremely good and clear, and Edinburgh has the good fortune to be the birth-place of what we firmly believe will prove a standard monograph of recognised merit and excellence.

Diseases of the Tongue. By HENRY T. BUTLIN, F.R.C.S., D.C.L., Surgeon to St Bartholomew's Hospital; formerly Erasmus Wilson Professor of Pathology and Hunterian Professor of Surgery at the Royal College of Surgeons; and WALTER G. SPENCER, M.S., M.B.(Lond.), F.R.C.S., Surgeon to the Westminster Hospital, and in charge of the Department for Diseases of the Throat; formerly Erasmus Wilson Professor of Pathology at the Royal College of Surgeons. London: Cassel & Co., Limited (new and revised edition), 21s.

THE fact of the first edition of Mr Butlin's book on the tongue having been translated into French and German is sufficient indication of its merits. Fifteen years have elapsed since the book was published, during which time our knowledge of the pathology and clinical features of diseases of the tongue has been greatly extended and our methods of treatment accordingly improved.

In a new edition of such an important work we looked for considerable alterations and the introduction of much new matter and we have not been disappointed. Mr Butlin has, with the assistance of Mr Spencer, given us a more complete book on diseases of the tongue than the first edition, which was in the form of a clinical manual.

At the present time when a surgeon is called upon to operate for cancer the lymphatic connections of the primary seat of the disease at once present themselves to his mind. In the first chapter Mr Spencer deals with the anatomy of the tongue in its relation to pathology and surgery. The description of the

lymphatics and lymphatic glands is based upon the work of Sappey and Küttner, and it is satisfactory to note reference to the presence of lymphatic gland substance inside the capsule, and between the lobes of the submaxillary salivary gland, an anatomical detail which in our experience has not received the attention it merits from surgeons in general.

After the anatomy the authors take up abnormalities, accidents, deformities, the various forms of glossitis, and the infective and parasitic diseases of the tongue.

The descriptions of chronic glossitis, of tubercle, and of syphilis, are exceedingly good. Excision of primary tuberculous ulcers is, in our opinion, rightly advocated, and, while syphilis is undoubtedly one of the most important diseases of the tongue we cordially agree with the warning that "nothing leads to greater errors in diagnosis and treatment than the tendency to see syphilis in every form of obscure affection of the tongue, or to persist in a diagnosis of syphilis where a short and vigorous administration of anti-syphilitic remedies has proved of no service."

The chapters devoted to diseases of the mucous and salivary glands, to cysts of the tongue, and to thyreo-glossal cysts and tumours are well written and brought up to date; the introduction of Rudolf Volkmann's table of submaxillary gland tumours indicates the great predominance of endothelial tumours in connection with salivary glands.

Cysts and simple tumours of the tongue are fully described and a new chapter on sarcoma, an affection of the tongue which requires further research and clinical experience, has been introduced.

Cancer is the most important disease of the tongue, not only on account of its frequency, and the necessity for its early recognition, but because an extended knowledge of the paths by which infection spreads from the seat of the primary disease has rendered surgical treatment more thorough and satisfactory.

The causation of cancer of the tongue in relation to long-continued irritation and inflammatory affections, the so-called "pre-cancerous" condition, the clinical features and diagnosis, —the microscopic test, repeated if necessary, is strongly recommended—are taken up in detail. The authors insist upon the baneful effects of treating simple indolent sores, in persons over thirty years of age, by strong caustics; and also, the danger of delay in the adoption, in doubtful cases, of operative treatment in order to "give the patient a chance," which really means in many cases "giving the carcinoma a chance" of passing beyond the reach of successful surgical interference.

Following upon an interesting chapter dealing with the early surgery of the tongue, and the evolution of the various operations performed for cancer, there is an excellent account of excision of the tongue. The importance of preliminary and after treatment—which has contributed so markedly towards the reduction of the mortality of tongue operations—is emphasised by careful and detailed description; the various operations necessary, according to the extent of the disease, and the removal of lymphatic glands taken up; and lastly, questions connected with operations, statistics, recurrence, and palliative treatment dealt with.

The two prominent questions in connection with the treatment of cancer are, first, how much of the tongue is it necessary to remove in order to ensure freedom from recurrence *in situ*? and, secondly, how far the knife of the surgeon should go in the removal of glands not obviously diseased? As regards the former the authors consider that the operation must comprise the removal of the disease and three-quarters of an inch of apparently healthy tissues around it in every direction.

The latter question is more difficult to answer and cannot be said to be definitely settled. Every surgeon of experience is aware of the futility, in most cases, of only removing glands connected with the seat of primary cancer, when they are palpable. The extent of operation necessary for carcinoma of the mamma is established. Are the same principles to be applied to the tongue? If so, it would appear that epithelioma of the tongue must, on account of its extensive lymphatic connections, be dealt with by operations of considerable magnitude.

The authors hold, on the authority of Heidenhain, that there is no strict analogy between the two. The one concerns glandular cancer, the other epithelial. It is supposed that epithelioma does not lodge in the lymphatic vessels, the cells are thought to pass like emboli to the glands; and, therefore, in cancer of the tongue the intervening lymphatic vessels not being infected and full of cancer, as is the case with the breast, it is not necessary to remove them.

The removal of the contents of the anterior triangle is recommended as a routine operation in all cases of epilthelioma of the tongue, even when there is no obvious enlargement of lymphatic glands. When the disease is in the middle of the tongue both sides should be cleared out. The operation, which may be modified according to the part of the tongue affected, includes when complete the removal of the submental, the submaxillary, the carotid, and parotid (superior carotid), lymphatic glands; and the submaxillary salivary gland, perhaps the sublingual and often a part of the parotid. The fascia and

connective tissue are dissected off the muscles in front, the sterno-mastoid behind, and off the sheath of the carotid artery and jugular vein.

The authors advise that the glands should be removed on a separate occasion—three or four weeks after the primary disease has been excised. We prefer, except perhaps in the case of feeble patients, and where both sides of the neck have to be attacked, to clear out the anterior triangle, tie the lingual artery, and excise as much as may be necessary of the tongue on the same occasion.

The volume, which concludes with an interesting chapter on the nervous affection of the tongue and a useful list of references, contains numerous illustrations, and eight excellent coloured plates, is written in a clear and attractive style. We feel confident that the hope which the authors modestly express in their preface, viz., that the book "may be useful to all those members of our profession who need help in the diagnosis and treatment of the more common diseases of the tongue; or who happen to meet, for the first time, with one of the rarer affections, and would know where and under what circumstances similar cases have been seen before" will be fulfilled.

Operative and Practical Surgery (for the use of students and practitioners). By THOMAS CARWARDINE, M.S. (Lond.), F.R.C.S., Assistant Surgeon, Bristol Royal Infirmary. Bristol: John Wright & Co. Price 10s. 6d. net.

THIS book, the author tells us, is intended to be essentially practical in character and to supplement the many excellent works on scientific surgery. The manual covers some 630 pages, and deals with antiseptics and dressings, surgical bacteriology, bandaging, dislocations, splints and fractures, general and regional operations, including those on the female genital organs, extraction of teeth, the examination of the nose, and larynx, ear diseases and their complications, and the examination and treatment of the eye.

The preliminary section on general considerations such as antiseptics, dressings, the examination of patients and case taking will be useful to the student when he begins his hospital work.

In many respects the parts dealing with dislocations and fractures are good, but although the author states in his preface that fractures are fully dealt with we can find no description of or reference in the index to the early and systematic treatment of these injuries by massage. The necessity for

breaking down adhesions in the joints of fractured limbs is, however, referred to more than once.

The sections on operative surgery cover, as we have indicated, a wide field, and are brought well up to date, for example, Mayo Robson's recent lectures on the stomach are referred to. The book, which is well written, is not a mere compilation, but contains evidence of original methods, such as the author's operation for median subperiosteal proctotomy. There is much to be said in favour of the advice to avoid primary amputation during the period of shock unless the sole object be the arrest of hæmorrhage and of the statement that "if an immediate amputation were not so frequently resorted to, as is customary in cases of accident, many lives would be saved."

The senior student will find the chapters on the nose, larynx, ear, and eye valuable when he is beginning his work in the special departments.

The book, which is a credit to the publishers, contains numerous excellent illustrations (550 in all), most of which are from original drawings by the author, will serve to assist the student in his hospital work, and prove useful, in certain respects, to the busy practitioner.

Diseases of the Gall-Bladder and Bile-Ducts, including Gall-Stones. By A. W. MAYO-ROBSON, F.R.C.S., Senior Surgeon to the General Infirmary, Leeds, etc.; assisted by FARQUHAR MACRAE, M.B., C.M. Glasg. Second Edition. Demy 8vo, pp. 312, 52 illustrations. London: Baillière, Tindall & Cox, 20 and 21 King William Street, Strand. 1900. Price 10s. 6d. net.

A SECOND EDITION of Mr Mayo-Robson's well-known lectures on diseases of the gall-bladder and bile-ducts will be welcomed by the medical profession. The first edition was published in 1897, and since then the author has operated on 135 new cases, making in all 305 operations in this department of surgery.

In this edition the narrative has been substituted for the lecture form, new chapters have been inserted, and, besides many additions made in the text, an index has been supplied. A useful alteration has also been carried out in the arrangement of the tabular list of cases. Formerly these were placed together consecutively in order of their occurrence at the end of the book; in this edition they have been classified, and the groups of cases will be found at the end of the chapters which correspond to them.

The headings of the five chapters into which the book is

divided are: 1, Anatomical considerations; 2, Inflammatory affections; 3, Intestinal obstruction; 4, Tumours of the gall-bladder and bile-ducts; and 5, Gall-stones.

The great value of this book arises from the authority of the writer. Mr Mayo-Robson is able to speak from a very extensive experience. He has moreover evidently read widely on the subject and has studied in many museums, but he sifts the knowledge derived from outside sources, and arranges it in line with his own. Thus we not only learn that certain methods have been suggested in treating some disease or complication, but we are told what a surgeon of large experience thinks of them.

The general drift of the author's opinion is in favour of operation for gall-stones as not dangerous in itself, if performed in time, and calculated to obviate the risk of numerous complications. Of these a formidable array—twenty-eight in number—will be found on pages 162 and 163. When gall-stones have once been formed, Mr Robson knows of no medicine given internally which will reach them, although olive oil has been shown to dissolve them if it can be applied to them directly—as, for instance, through a biliary fistula. Massage he highly disapproves of. It is likely, he thinks, to do very little good on the one hand, and a great deal of harm on the other. One who has directly handled so many gall-bladders and bile-ducts containing gall-stones ought to know. If direct palpation will not dispose of them, except occasionally by crushing between the fingers, how can we expect massage through the abdominal wall to be effective?

The illustrations are for the most part reproductions of photographs of specimens. On page 147 is a drawing of a liver which is surely placed upside down.

In the preface to this edition we are told that the first edition was sold out very shortly, and we prophesy a similar fate for this one. Physicians should read it to find out how much can be done for their patients by their surgical colleagues, while none of the latter will neglect it who wish to keep abreast of their subject.

A Manual of Modern Gastric Methods, Chemical, Physical, and Therapeutical. By A. LOCKHART GILLESPIE, M.D., F.R.C.P.Ed., Medical Registrar, Royal Infirmary, Edinburgh. Pp. 175. Edinburgh: Oliver & Boyd. Price 5s.

THIS *Manual* is a careful and useful compilation, and presents in a clear and concise form the chemical, physical, and therapeutical methods which have been suggested for the investigation of gastric and digestive conditions. Investigations in this direction

have been pursued in a painstaking and diligent manner by many physicians, and have thrown much light on digestive processes and their disorders, the outcome of which has been a more intelligent and correct standpoint from which to estimate digestive disturbances, and at the same time a more rational therapeutics. Many of the methods of examination which have been introduced are, however, too elaborate to make them of any practical value to the clinician, and as experience broadens, it is found that for practical purposes the methods required are comparatively limited in number and easy of application. There is a tendency in various quarters to elaborate what may be called gastric technique, and to treat the stomach as if it were a laboratory beaker, or as if no accurate conception of individual gastric disturbances could be attained without test-meals, removal of gastric contents, elaborate analysis, and experimental digestive investigations. While these are all helpful in certain obscure and difficult cases, the physician armed with modern knowledge, and if wisdom has not lingered behind knowledge, is able to diagnose and to treat successfully the vast majority of cases without having ever seen the gastric contents. It is necessary to accentuate this, for there is a tendency to rush to the stomach tube and to give it a position of prominence to which it is not entitled. As aids to diagnosis, and sometimes to make the diagnosis even possible, the stomach contents are required and must be obtained, and must be examined in some considerable detail. In such cases this little volume becomes of service from its convenient size and the clearness of its descriptions, and we have confidence in commending it on these grounds and also on account of its accuracy.

The *Manual* contains a short chapter from the pen of Dr John Thomson of Edinburgh, on the mechanical methods used in young children.

An appendix is added, containing descriptions of some of Turck's latest instruments. The American seems to take more kindly to this kind of thing than the average Briton.

The Pathology and Treatment of Sexual Impotence. By Victor G. Vecki, M.D. From the Author's Second German Edition, revised and rewritten. Pp. 291. London: Rebman, Limited. 1899. Price 12s.

The danger of being reckoned among "medical fogies" with "superannuated gods" is scarcely enough to compel acceptance of the author's fundamental position, which is essentially summarised in the sentence: "When nature has done her work of bringing the man to maturity, when the testicles have produced

sperm, and that sperm is thrown out by pollutions, when the youth's whole being is undergoing a radical change, then I cannot understand why he should not satisfy that impetuous, irresistible longing; why he should be condemned in the best part of his life to become an onanist or to lose his power by pollutions."

The following definition of virility is half-poetical. "When virility is in full vigour the sight, the slightest touch, the first embrace of the desired woman, must cause sexual desire and the erection necessary to the performance of the act"; and this and several other expressions, make one glad that the author has prefaced woman by the definite article. It is not easy to acquit him of the charge he brings against his opponents of judging too much by their personal experience, and it would seem needful to remind him that the even prior desires of personal nutrition are subject to limitation and restraint, and that right and wrong is not even with them determined by the presence of appetite. The author's own observations are interesting but not specially new, and most of the information can be found in books with a more just perspective.

The Treatment of Pelvic Inflammations through the Vagina.
By WILLIAM R. PRYOR, M.D., Professor of Gynecology, New York Polyclinic, etc. Pp. 248, with 110 illustrations. London: Rebman, Limited. 1899. Price 8s. 6d. net.

IN this little volume, which arose out of a series of post-graduate lectures, Dr Pryor gives an account of the methods he has adopted in his practice. The predominant spirit is, as the preface says, that of an aggressive interference, though palliative methods are described for cases unsuited for operation. In puerperal infection the treatment is irrigation of the uterus, or if the infection has passed beyond the reach of this, curettage and the opening of the pouch of Douglas. After curetting, the uterus is packed with gauze, and an incision made in the mucous membrane behind the cervix. The finger is then shoved into the pelvis, on which a small quantity of serum usually escapes. The organs are then carefully palpated, and any adhesions separated. The opening is then stretched by pulling it open with two fingers, and the pelvis packed with gauze. The vagina is also packed. The curettage is always instrumental owing to the relatively greater difficulty of sterilising the finger. The results have been so uniformly good that Pryor believes hysterectomy for sepsis to be unnecessary. The treatment of other conditions is conceived in a similar spirit, and as the procedures are described in considerable detail so that they can be readily understood and

followed, the whole constitutes a most interesting volume which is worthy the attention of the gynecologist as well as the general practitioner.

Nursing in Diseases of the Throat, Nose, and Ear. By MACLEOD YEARSLEY, F.R.C.S., Assistant Surgeon to the Royal Ear Hospital, etc. etc. London: The Scientific Press, Ltd. 1899. Price 2s. 6d.

THE advances that have been made in the modern treatment of the diseases of the throat, nose, and ear, have made it evident that some additional training in the special requirements of the surgeon are necessary even for the best of nurses. Dr Yearsley, in the little volume before us, has attempted to supply this. Commencing with an elementary account of the anatomy and physiology of the ear, he proceeds to mention the various operations and procedures, with the instruments, appliances, dressings, etc., which are likely to be required for them. He points out what a skilled nurse should do in getting everything ready for the surgeon, and also what devolves upon her in the after-treatment of the case.

Much of the success and comfort of the surgeon in operating depends on a skilled nurse; and familiarity with the technique of the operations will greatly help the nurse to do what falls to her lot in an intelligent manner.

While a short training in a special department must always be of greater advantage than the knowledge obtained purely on theory, yet this little book will serve a good purpose, and should be of practical service to every nurse who wishes to be thoroughly trained.

Atlas and Abstract of the Diseases of the Larynx. By Dr L. GRUNWALD of Munich, authorised translation from the German, edited by CHARLES P. GRAYSON, M.D., Lecturer in the University of Pennsylvania. London: The Rebman Publishing Co. 1898. Price 10s. 6d.

THIS small atlas is certain to become widely known, and to be highly appreciated. In it the morbid appearances of the various diseased conditions of the larynx are reproduced with a lifelike resemblance, and with a skill and accuracy which is rarely seen. The coloured plates, which number forty-four, contain 107 figures, and are the nearest approach to the appearances met with by the laryngologist in actual practice, which the skill of the printer can effect.

The author has not arranged his illustrations according to the usual classification of the diseases of the larynx, but has grouped them according to the parts of the larynx affected.

At first sight this might seem to be a disadvantage, but on the other hand it aids the study of the differential diagnosis by bringing together conditions similar in appearance but occurring in different diseases. The histology of the morbid conditions is depicted in twelve excellent plates of microscopic sections.

At the commencement of the volume will be found, in the space of about ninety pages, a short, concise, but practical abstract dealing with the anatomy and physiology, the methods of examination, and the pathology and treatment of the larynx.

The skill and fidelity with which the figures have been drawn, and the excellent style in which the volume has been got up, deserve high praise; and enable us to commend this atlas to the notice of those studying the diseases of which it treats.

Chirurgie du Foie et des Voies Biliaires. Par J. PANTALON. (de Marseille). Avec 348 figures dans le texte, pp. 564. Paris: Institut de Bibliographie Scientifique, 93 Boulevard Saint-Germain.

THIS is an admirable monograph, and is a regular mine of information in this comparatively new department of surgical practice.

The author divides his subject into four branches:—1, the liver; 2, the ligaments, blood vessels, and lymphatics of the liver; 3, the gall bladder and cystic duct; and 4, the common bile duct, hepatic ducts, and bile capillaries. Each chapter is methodically treated on the same plan. There is first an historical sketch of operations on the particular part under discussion, then an account of the various operations now practised; this is followed by a description of results and complications, and the whole is concluded by "indications" for the application of the methods described to the various kinds of cases.

There is no direct reference to published papers, but at the head of each chapter certain figures are printed which would guide French readers to the sources from which the information has been drawn. The system is described as the "Dewey-Marcel-Baudoin" one, but this statement will probably only help workers in France. The frequent reference to English and American surgeons, however, and the reproduction, with acknowledgment, of the illustrations which have appeared in such journals as the *Annals of Surgery*, show that the author has consulted works in English freely, and the same may be said of those in German, and, of course, in French.

Those who wish to have a clear account of the present position of the surgery of the liver, with photographic reproduction of all important illustrations, will do well to consult this work.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

THE ETIOLOGY OF CARCINOMA
THE PATHOGENESIS OF APPENDICITIS

By WILLIAM RUSSELL, M.D., F.R.C.P.Ed.,
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The Etiology of Carcinoma.—An important contribution to this subject is made by Professor G. Leopold from the Königl. Frauenklinik in Dresden, and appears in the *Archiv für Gynäkologie*, Bd. 61, H. 1. His attention was directed to the subject by the sympathy which the cases he met with in his clinic aroused in his mind. He has been investigating the subject for a number of years, and refers to the first part of his investigations which he made with his assistant Dr Rosenthal. Dr Rosenthal published the result of investigations made by means of the hot stage on material taken from fresh cancers. He observed movements in cells the nature of which he did not determine. Since 1896 Professor Leopold has continued the investigations himself. His material was taken from several hundreds of cases. The investigation was conducted by means of a specially constructed microscope with which material could be examined for prolonged periods at a definite temperature. Great care was exercised in taking cultures, and inoculations were made into rats, guinea-pigs, and rabbits. By the investigation of fresh tissue in the hanging drop cells were seen which could not be regarded as other than blastomycetes. When these were found a piece of tissue from the same case was put with all precautions into sterile bouillon and sterile grape sugar solution and tested in the usual way to see if fermentation with the formation of carbonic acid and alcohol occurred. From these positive results were obtained. For microscopic investigation the most useful stains were hæmatoxylin and carbol-fuchsin, but it was not always possible to stain the blastomycetes even when their presence in large numbers was clearly made out. These were the methods followed, and now we may consider what was observed by their help.

1. *In fresh tissue.*—In introducing this aspect of the investigations, he says that however fully one has studied granules and nuclei both free, and in the great variety of form presented inside cells, the impartial observer notes forms and appearances in cancer which differ from all these. The special appearances to which he alludes are in the first place buddings and dividings,

also spore-formations consisting of glancing, in part glass-like structures, which Rosenthal called, for the case of brevity, glass-bodies (Glaskörper). He then proceeds to describe these glass-bodies as they were observed by means of the heated microscope. By means of this ingeniously constructed apparatus he was able to accurately determine whether the material he was examining was free from ordinary micro-organisms, and moreover he could watch the changes for months on end, some of his observations extending over a year. In all his observations the special feature was the presence of the glancing glass-like balls in constant movement. On the surface of these a small projection appeared, which increased in size and separated. When these attained a certain size a vacuole was formed in their interior, which increased in size with the increase of the ball. The ring round the vacuole contained now and then fine granules. From observation of single balls with the surrounding small balls for a lengthened time the multiplication which took place was clearly seen and confirmed by various observers. This process took place very slowly. Similar observations were made on fresh material taken from a number of cases. Specially striking was a process seen in large balls containing granules in active movement exactly similar to the small granules which can be seen for hours in active movement in the cells of blastomycetes. The appearances were as follows in one case:—At 9.30 A.M. a clear ball with regular round wall showed thickly set small balls in active movement in its interior; after half an hour the wall became uneven, and numerous small balls had swarmed out and surrounded the mother cells in active molecular movement; after two hours the wall had again become smooth, the small balls which had remained inside still showed extraordinary activity, while those outside were now at rest; the movement of the inner balls was observed for half an hour longer, and after this there was only to be seen a clear ball with a capsule and two finely refracting granules inside it, and these latter were merely shadows. In one case the place of rupture of the mother cell was clearly seen; this cell contained shining and whirling balls, which the observers saw to be shot out of the cell, until at last there was nothing but an empty clear capsule left. Having thus described the appearances noted by means of the heated microscope, Leopold proceeds to prove the identity of these bodies with blastomycetes by their chemical reactions, and by the growth of cultures. Busse considered caustic soda to be the best reagent for demonstrating blastomycetes in fresh tissue. Binaghi and others used caustic potash, hydrochloric, nitric, and sulphuric acids. All these methods destroy the tissues, but not the parasites, so that the blastomycetes

become clearly apparent. Tissue and ascitic fluid from a case of ovarian carcinoma with metastasis in the omentum were examined one hour after operation, and then showed blastomycetes, both in the hanging drop of sterile bouillon and in a hanging drop of caustic soda and of hydrochloric acid also. The appearances in all these showed absolute similarity, and a notable point was that some of the single balls seen in the hydrochloric acid hanging drop showed the fine internal granules so characteristic of the yeasts, and these, moreover, showed active movement for some hours. For demonstration caustic soda was the best medium. Not only was there a great number of the round bodies of all sizes from the finest points up to 10 μ in size, but there were also larger numbers of attached buds than were to be seen in the bouillon hanging drop, above all it could be clearly determined that the large clear balls containing whirling granules were nothing but blastomycetes, at least were not *Mastcells*, as had been contended by some observers, for it could be seen by powerful magnification that these granules were possessed of exactly the same form, disposition, and manner of budding as the large single refracting balls with the clear ring surrounding them.

2. *Taking of cultures.*—In the last two years in the investigation of twenty cases of human carcinoma he got pure cultures of blastomycetes in four cases, these being obtained from the outposts of the new growth.

3. *Demonstration of fermentation.*—A further proof of the nature of the organism is found in the production of fermentation on the addition of a grape sugar solution to the bouillon containing the organisms grown from the tumours.

4. *Microscopic investigation.*—The details of this need not be given, beyond stating that the best results were obtained with the use of carbolfuchsin and hæmatoxylin and eosin. In some cases they were easily seen, in others they had to be carefully sought for.

5. *Inoculation experiments.*—Reference is made to inoculations by other workers, more especially to those by Sanfelice, which were fully described in this Journal in May 1899. Unlike Sanfelice, Leopold followed the direct method, that is, he used culture for inoculation taken from human cancers, while Sanfelice followed the indirect method in that he isolated a blastomycetes from fruit and inoculated it into animals. Leopold inoculated animals both with fresh material from carcinoma and with blastomycetes grown from carcinoma. By the former of these methods he produced new growths in animals which contained bodies morphologically similar to blastomycetes. In one case a tumour was produced but the animal only began to emaciate in the fourth year after inoculation, and it died four years and five

months after the date of its inoculation. A bit of cancerous tissue had been introduced into the abdominal cavity and a tumour the size of an orange ultimately developed in the abdominal cavity with nodules in the liver and lungs. By the second method, namely inoculation by blastomycetes grown from human cancer, he did not obtain satisfactory results for he mentions only one positive result. Altogether he succeeded in obtaining positive results in three instances. He sums up as follows:—1. In fresh ovarian carcinoma he found blastomycetes. 2. From this he obtained a pure culture of blastomycetes. 3. This pure culture injected into the testicle of a rat gave rise to a large number of peritoneal nodules which led to the death of the rat. In the fresh and hardened tissue large numbers of blastomycetes were found. 4. From the fresh nodules in this rat pure cultures of blastomycetes were again obtained. With this pure culture he has inoculated other rats, and he claims that if the results are successful the chain of proof will be closed and no doubt remain as to the part played by blastomycetes in the production of malignant tumours.

This work by Leopold is another distinct advance in the proof that the structures present in cancer are blastomycetes. Sanfelice's experimental work and Roncali's histological work have already been referred to in these pages.[1] Leopold's work is confirmation from a new side—his ingeniously constructed microscope has enabled him to carry on prolonged observations in raised temperatures, and he has succeeded in explaining appearances which led to the mistaken view that the structures were coccidia or at least amœbæ. The writer of this abstract is particularly interested in the observation of the smaller bodies inside the large ones and their extrusion therefrom, for this was one of the appearances he referred to in his original paper on the presence of blastomycetes in cancer. He is also interested to find that the stain he had used, namely carbolfuchsin has been found most useful by Leopold. From the practical standpoint the discovery by Leopold, that the small fuchsin staining granules are really minute blastomycetes, explains how the extensive infection of the peritoneum, which takes place when a cancer nodule ulcerates into it, is brought about—a phenomenon that those who have held by the parasitic etiology of cancer saw no other means of explaining.

All investigations which add to our knowledge of appendicitis are so valuable that no apology is required for reproducing here in a somewhat lengthy summary a valuable paper in the *Transactions of the College of Physicians*, Philadelphia, 1899, on

[1] *The Scot. Med. and Surg. Journal*, 1899, Vol. IV., p. 426.

The Pathogenesis of Appendicitis, by Dr Aloysius O. J. Kelly of the Pathological Institute of the German Hospital of Philadelphia. The investigation covered the examination of 460 appendices, these all having been removed by Dr John Davis at the hospital during two years. To check the observations on this great number of morbid appendices 50, presumably healthy ones, removed at necropsies were also examined. The classification based upon the investigations is much the same as that given by others: two broad classes are given acute and chronic.

A. Acute appendicitis is divided into—

1. Catarrhal, (*a*) simple, (*b*) purulent, (*c*) hæmorrhagic. 2. Interstitial. 3. Ulcerative, (*a*) non-perforative, (*b*) perforative. 4. Gangrenous.

B. Chronic appendicitis is divided into—

1. Catarrhal. 2. Interstitial. 3. Obliterating.

With regard to this classification he recognises that different varieties may present analogous clinical manifestations.

He enumerates what he considers the predisposing factors which make appendicitis in many respects such a unique disease: they are (1) the shape of the meso-appendix, (2) the length as compared with the width of the appendix, (3) Gerlach's valve, (4) the histological structure of the organ, (5) the blood-supply, (6) the nerve supply, (7) the evidences of involution of the organ.

The most novel point brought out in connection with the meso-appendix is that if it be relatively narrow as compared with the length of the appendix the latter is correspondingly curved or distorted; and to a corresponding degree the free drainage of the organ is interfered with, and this is one of the most important etiological factors in appendicitis. The length as compared with the width of the appendix exercises a like influence on drainage if the length be great as compared with the lumen. He does not think that Gerlach's valve is of much significance. The histological structure of the appendix has important bearings upon the pathogenesis of inflammation of the organ. It is now generally known that it differs from the rest of the intestinal tract in the large amount of lymphoid tissue in its wall. Another point brought out, which is regarded as not without significance, is the relatively extensive epithelial surface that it presents. The blood-supply of the organ and the possible influence it may exert has been studied. Fowler and Van Cott were the first to draw attention to changes met with in the structure of the blood-vessels supplying the organ; these changes consist of variations in the thickness of the different coats of the vessels influencing their lumen, and therefore the blood-flow: they also noted changes in the nerves which they regarded as an interstitial neuritis. From these observations

they argue that the real cause of the locus minoris resistentiæ admitting of bacterial invasion is to be sought in a trophic disturbance of the appendix rather than in trauma of the mucosa. Brever, who looked into this subject, did not confirm Fowler and Van Cott's observations, and Kelly thinks that they have overestimated the importance of their observations, while at the same time he acknowledges that he has found such vascular changes as they have described both in appendices which were presumably normal and in others the seat of chronic inflammation. He does not believe that ulceration of the wall can with reason be ascribed to arterial alterations; but at the same time he thinks that this precarious blood supply may be in part answerable for the disastrous consequences of inflammation in this structure as compared with other parts of the intestine. The evidences of involution of the appendix are gone into in detail; they are present in a considerable proportion of appendices examined, and their significance lies in their indicating that the organ has a low resisting capacity which permits of the more ready operation in the appendix of the exciting causes of inflammation.

The foregoing are the factors which predispose the appendix to attacks of inflammation, and their importance need not be further pressed. In one case one factor predominates in another a different factor.

Coming next to the exciting causes of appendicitis it is, of course, to be recognised that these do not differ from those that induce inflammation in other parts. Those are mechanical and chemical irritation and bacteria. In given cases it is often difficult and even impossible to distinguish sharply between chemical irritants and bacteria. Kelly's bacteriological examinations are in this connection of great value. He examined bacteriologically 201 cases. The first inoculation in each case was made from the lumen of the appendix after aseptic incision of its wall, and it was made from the seat of most evident disease. Inoculations were also made from the exudate on the surface, from free pus, and from the drainage fluid subsequent to operation. At times cover-glass preparations were made directly from the pus or other contents or exudate on the peritoneal surface. Of the 201 appendices examined, 94 were instances of acute appendicitis and 107 of chronic. The results were as follows:—

	Acute Appendicitis.		Chronic Appendicitis.	
	Cases.	Per cent.	Cases.	Per cent.
Bacterium coli commune alone . .	69	73·4	96	89·71
Do. do. with staphylococcus pyogenes aureus . .	13	13·85	5	4·70
Bacillus pyocyaneus alone . .	6	6·4	1	0·93
Staphylococcus pyogenes albus alone	3	3·2	—	—

	Acute Appendicitis.		Chronic Appendicitis.	
	Cases.	Per cent.	Cases.	Per cent.
Staphylococcus pyogenes aureus alone	1	1·05	1	0·93
Bacterium coli commune and streptococcus pyogenes . . .	1	1·05	—	—
Bacterium coli commune and bacillus prodigious	—	—	1	0·93
No growth	1	1·05	3	2·80

These results differ somewhat from those of other observers. It has been asserted that appendicitis results from a mixed infection and that it seldom results from a mono-infection. In Kelly's cases this has not been shown to be the case save in 14 out of 94 acute cases and in 6 out of 107 chronic cases. He therefore is justified in coming to the conclusion that the bacterium coli commune plays by far the predominant rôle in the bacterial origin of the disease. There is the further fact that the conditions in the appendix are most favourable for the sudden and rapid increase in the virulence of a bacterium, innocuous or almost so in other parts of the intestinal tract. Under favourable conditions this bacterium readily outstrips others in the luxuriance of its growth, and the conditions necessary for this are to be found in the appendix. This does not exclude the action of other organisms in association with bacterium coli commune in some cases, or in still rarer cases as the sole pathogenic bacterial agent.

The relation of the fæcal mass, so frequent in the appendix, to the disease in question, is of considerable interest. It has been known by various names. These fæcal concretions are now regarded as being formed in the appendix. As regards the relative rôles played by bacteria and fæcal concretions the latter are regarded, and we think rightly so, as quite subsidiary. When the questions are asked, Why is it that bacteria, harmless elsewhere, and fæcal concretions, harmless elsewhere in the intestinal tract, may lead to such grave conditions here. The answer is doubtless to be in part found in the anatomical considerations already enumerated; but Kelly wisely does not lose sight of a factor which there is a tendency to ignore, namely this, that disease is due not alone to the virulence of the determining cause, be it bacteria, trauma, or other cause, but is dependent to a considerable degree upon the predisposition of the individual, upon the vitality, and the power of resistance of the part attacked. Thus it is that morbific influences readily overcome by normal physiological activities in other parts of the intestinal tract can, when present in the appendix, induce the most deleterious consequences. In recapitulating the factors that tend to make the appendix less resistant than other parts

of the intestinal tract, the main one is the precarious blood-supply of many appendices. The factors that give rise to increase in the virulence of bacteria normally present in the intestine are those which interfere with thorough drainage of the organ. This defective drainage may be brought about in various ways—it may be so situated as not to be readily emptied: its lumen may be constricted by bands and so forth, or by obstructions within its lumen. Congestive disturbances of the appendix or of the cæcum may cause such swelling of the mucous membrane as to lead to approximation of the opposed surfaces in the appendix, or occlusion of the outlet, and thus effectually prevent drainage. These fæcal concretions may not only occlude, but by attrition, the result of constant or intermittent peristalsis, cause erosions of the mucous membrane, and thus reduce the power of the organ to overcome the attacks of bacteria or their toxius. That increase in the virulence of the bacteria can take place in these conditions in the appendix is confirmed by a like increase in intestinal obstruction and strangulation, and in various congestive and diarrhœic conditions, and even in cases of marked and long-continued constipation. This side of the question has been investigated experimentally by Roux, Roger and Josué, Dielafoy, and Frasier, and amply confirmed.

GENITO-URINARY SURGERY

By JOHN SHAW M'LAREN, F.R.C.S.Ed.
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The Catheter-Cystoscope.—Though the cystoscope has now a most assured place in urinary surgery, and in many instances furnishes a diagnosis otherwise impossible, it will be conceded that the use of the instrument is frequently hampered by so many embarrassing conditions, that any modification tending to simplify cystoscopy will meet with a hearty welcome from all who are called upon to practise this method of investigation. If Schlagintweit's "Catheter-Cystoscope" (*Centralblatt für die Krankheiten der Harn- und Sexual Organe, Band xi. Heft* 3) answers all the claims which its inventor makes in its favour, cystoscopy will be much more frequently practised even than it is now.

Schlagintweit mentions the following disadvantages of the ordinary cystoscope: (1) the need for introducing a catheter for cleansing and filling the bladder before the cystoscope is used. This is, of course, a most important part of the proceeding, and it is often as tedious as it is important. (2) The annoying ease with which blood or pus obscures the prism. The enlarged

prostate cases enjoy an evil distinction in this respect; and indeed, in many a case of examination for a bleeding tumour near the neck of the bladder, the instrument is no sooner introduced than it is obscured. In a pyelitis, too, the short time between the withdrawal of the catheter and the introduction of the cystoscope sometimes suffices to make what was clear fluid too turbid for the examination. Of course the "irrigation-cystoscope," by permitting a cleansing stream to flow over the prism, surmounts this difficulty to a certain extent, but the process often absorbs much time, especially if the narrow irrigating canal becomes blocked. (3) The clamant call to urinate during the examination of some cases which necessitates the removal of the ordinary cystoscope, and even of the irrigation-cystoscope. (4) Difficulty of sterilizing the instrument—this only in the case of the irrigation-cystoscope. (5) The difficulty of injecting medicaments even through the irrigation-cystoscope. With the ordinary cystoscope this is, of course, impossible; it must first be withdrawn and a catheter be then introduced, making—with the preliminary washing—the third instrument in one sitting.

Schlagintweit's cystoscope is really an ordinary metal catheter with the usual curve—through which fluid can flow into and out of the bladder—into which at will a cystoscope can be pushed. A somewhat similar principle is followed in Guterbock's and in Nitze's instruments, and in the French "irregaloscope," but various weighty objections can be urged against them from which the catheter-cystoscope is wholly free. It consists of two parts: first, an ordinary metal catheter, but carrying a lamp at its point; and second, the "*Optik*," or telescope part of the ordinary cystoscope, which is pushed down into the catheter so that the prism lies in the eye of the catheter. The catheter is introduced into the bladder in the usual way, the bladder can be washed out and filled with clean fluid, and then, without further change, the telescope-tube is pushed in, and the examination proceeds. As often as necessary the telescope is withdrawn and the bladder recleansed, while the catheter part of the instrument remains in the bladder, which thus suffers the minimum amount of irritation from the investigation. The outer end of the telescope portion is provided with a cork ring which closely fits the catheter and effectually prevents leakage, which can occur only to the extent of a few drops while the telescope is being pushed in. As the cystoscope —that is the telescope part of it—has to be included in a catheter, as it were, it is of necessity diminished in calibre, and so offers a smaller field than the ordinary cystoscope.

The inventor claims that his instrument makes a cystoscopic

examination a much simpler, surer, and quicker procedure than is the case with other cystoscopes, and therefore better tolerated by the patient. Cystoscopy, with it, becomes a much more frequent occurrence; in any ordinary case where catheterization is required or permissible, the catheter part is introduced and used as an ordinary catheter, and then the opportunity can be seized—at the further expense of a few seconds merely—of introducing the optical part and throwing a glance round the bladder. In this way Schlagintweit declares that, by taking a glance with his instrument, while in the ordinary act of catheterizing "prostatic" patients, he has frequently discovered a nest of little uric acid calculi lying behind the prostate, and has been enabled thus to quickly rid the patient of them by a little careful irrigation.

Something, doubtless, must be conceded to the parental enthusiasm of the inventor, but it is not difficult to imagine that the catheter-cystoscope may render cystoscopy so much simpler that it will be much more frequently resorted to by those who are not "experts." "Cystoscopy," Schlagintweit concludes, "once a comparatively serious procedure," now appears as the simple appendage of almost every catheterization.

Excision of the Spermatic Veins for Enlarged Prostate.—Desnos has an interesting paper on this subject in the *Annales des Maladies des Organs Génito-Urinaires*, Jan. 1900. In 1897 Albarran published the account of an operation for prostatic hypertrophy which he termed *angionévrectomie*, and which consisted in excision of the vessels and nerves of the spermatic cord with the exception of the spermatic artery and one or two veins which accompany it. Experiments on the dog had shown that such a procedure leads to atrophy of the glandular elements of the prostate; Albarran had operated once on a patient, and with satisfactory result. The operation, however, that Desnos describes is simply that for varicocele, associated on the continent with the name of hourteloup, but devised independently and practised for many years by Dr P. H. Maclaren of Edinburgh—an excision of the veins of the cord and the removal of a portion of the redundant scrotum. He reports the result in seven cases operated on by himself, and the records show in a most interesting way the effect on the dysuria which was a prominent symptom complained of by the patients. Two fairly typical cases may be summarised. (1) A man of sixty-two years of age, in good health, but troubled for fifteen years with varicose veins of the cord and a long and flaccid scrotum for which he had worn a suspensory bandage. For about two years urination had been very frequent during the night, accompanied

by a certain difficulty, the urine coming very slowly, and being turbid. The symptoms grew worse: urination fifteen times in the twenty-four hours, pus at the end of the act, eighty grammes of residual urine, the prostate about the size of a mandarin orange. As the scrotum had become extremely pendulous and the varicosity had increased, the spermatic veins and a portion of the scrotum were excised. Urination remained as before for four days—fifteen times in the twenty-four hours, then sank almost daily till in less than a week it was six times in the twenty-four hours; residual urine had fallen from eighty to fifteen grammes. Six months later the urine was clear, the prostate much diminished in size. Three years after the operation the frequency had slightly increased, and the residual urine was thirty grammes. (2) A man, aged sixty-eight, troubled with urinary symptoms for many years, urination difficult, taking place almost every hour day and night, urine slightly purulent, a hundred grammes of residual urine, the prostate fairly large, the left lobe much larger than the right, scrotum pendulous, and some dilatation of the spermatic veins. As regular catheterization and irrigation of the bladder produced no benefit, the same operation was performed as in the previous case. The night of the operation the frequency, which had been six the previous night, fell to three; improvement continued, so that in less than three weeks micturition was quite easy, violent effort was no longer necessary, and the frequency was almost normal; a month later still the improvement continued, the prostate was palpably smaller; yet there were fifty grammes of residual urine. A year later the prostate remained small, clear urine was easily passed, residual quantity the same; but for a month or two the frequency seemed to have increased slightly, being twice or thrice during the night.

In one of the seven cases, the operation was a complete failure. In the other six there was marked improvement as regards (*a*) the "congestive" element—the act of urination began more easily, the stream was full, and the improvement took place very soon, in two cases within a few hours after the operation; (*b*) hæmaturia—present in two cases before operation, blood was never again seen in the urine; (*c*) pain and straining—these soon disappeared; (*d*) retention—each case suffered from "incomplete retention," and each case benefited in this respect, in some most markedly, where the force of the stream gained evidently in a notable degree; (*e*) pyuria—this seemed to diminish in proportion as the bladder gained in contractility; (*f*) the size of the prostate—in almost every case a diminution was noted, the beating of the small arteries was less distinct, and the organ was softer. In two cases the improve-

ment had continued four years, and in the other four it had lasted many months, though there had been a slight tendency to increase in frequency again. Notes of six other cases are given where the operation had been performed years before for varicocele, and in almost all the cases, though the patients were now more than sixty, the prostate was small, or actually atrophied. Desnos declines to suggest any explanation of the effect produced by this operation other than that it may resemble Albarran's, since the nerves are probably removed with the veins. He draws an interesting distinction between the varicocele of young men and the condition seen in old men where the scrotum is long and flaccid, and the veins are thin and "atrophied." He suggests this may tend to produce congestion in the prostate. He is inclined to think that the operation described leads rather to a "de-congestion" than to a real atrophy of the prostate.

The Operative Treatment of Ectopia Vesicæ.—Brandford Lewis has a rather convincing article on this subject in the *Annals of Surgery*, June 1900. Two main classes of operative work have been undertaken—the one consisting of attempts to cover in the floor of the bladder and urethra by flaps of skin; the other to divert the urinary channel into a better external opening, or into the lower bowel which then acts as a receptacle for the temporary retention of the urine. Lewis "plumps" for diversion into the bowel.

Maydl was the leader in both methods. The plastic operation covers the exposed membrane and renders more easy the collection of the urine by a urinal; but it furnishes no sphincter, no retentive power to the bladder, so that a urinal is still required, and, secondly, the hairs growing on the inturned skin project into the artificial bladder, become incrusted with phosphates, and produce great irritation. Such bladders require regular scraping. The other method—Maydl's later suggestion—has proved much more efficacious. It consists in cutting out the trigone with its ureters, and implanting them in the sigmoid colon; then removing the remainder of the bladder, and closing up the resulting abdominal aperture. The bowel in time tolerates the urine, and also retains it for some hours.

Rutkowski (*Centralblatt für Chirurgie*, No. 16, 1899), argued that the bladder should not be sacrificed as in the transplantation method, but should be utilised; and, following a clever experiment by Tizzoni and Pozzi, he resected a portion of small intestine which he left attached to its mesentery, and then sewed it to the edges of the bladder. This did away with the disadvantage of the hairs, and supplied a *muscular* flap. The

patient, a boy twelve years of age, was able to retain a little urine for about an hour.

Mundel (*Annals of Surgery*, Dec. 1899), improved on this very risky plan by suggesting that the bladder-wall should be taken from a sheep, ingrafted under the skin of the abdomen, the mucous membrane surface lying on gold-foil to prevent its adhering; then, when union had taken place, the flap could be used to cover the extroverted bladder. He demonstrated the feasibility of this by experiment.

Carl Beck (*Chicago Medical Recorder*, Nov. 1899), transplanted the ureters for an incurable tuberculosis of the bladder. He cut the uterus at the bladder, picked up the ends, and inserted them into the sigmoid colon so as to penetrate its wall very obliquely, leaving an inch and a half of the ureter ends hanging free in the lumen of the bowel. The result was brilliant. Beck attributes the success partly to the choice of the sigmoid instead of the rectum. Fowler, however, noticed in his case of transplantation *into the rectum* that defæcation took place with normal solid fæces once daily, and that urination occurred at about the normal intervals; and he suggests that accumulation of fæces normally takes place in the sigmoid, till just before defæcation, when the rectum fills. Therefore the rectum served well as a receptacle for the accumulation of urine, and the sigmoid for the accumulation of fæces.

Compare the results of the two methods. The plastic operation—Thiersch's case reported by Küster was little benefited; Pozzi's patient, one of the best cases by the plastic method, could sometimes retain his urine twenty minutes; and so on. The transplantation operation—Lewis records seventeen cases with two deaths; urinary continence perfect in all except two; patients able to hold their urine for at least three hours, sometimes six or seven hours, and in one case throughout the night; tolerance of the rectal membrane perfect.

Little wonder Lewis prefers the transplantation method!

OBSTETRICS AND GYNECOLOGY

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Extra-uterine Pregnancy.—An extra uterine pregnancy is a great mistake. It is also in too many cases the immediate cause of a double tragedy—the death of an unborn infant and of

its mother. As in another great mistake, placenta prævia, the vis medicatrix naturæ seems helpless in face of the impending disaster; there is, as it were, an abdication in favour of the skilled assistance of the gynecological surgeon and the obstetrician in order that an attempt may be made to retrieve the position: even then the attempt may fail. We may compare Mother Nature to the practised *raconteuse*. For almost countless ages she has been telling the story of reproduction. At first it was a simple tale, such a tale as she is still telling in the case of the protozoa and the lower metazoa; by degrees it became more and more complicated as she elaborated descriptions and multiplied incidents and gave us the story of sexual reproduction of the higher invertebrata and the lower vertebrata; finally, it has become the wondrously intricate and breathlessly absorbing narrative which she puts before us with such effect in the higher mammals and more particularly in man. But to achieve such grand results she has had to take risks; where so many details have to go in there is increasing danger that one of them may be omitted or put in at the wrong place; where there are so many interesting situations there may be too much distribution of attention; where climaxes abound the spectre of the anticlimax stalks. A momentary abstraction on the part of the narrator may permit the intrusion of an earlier and less effective manner of telling the story; through want of watchful attention an impossible situation may be created which will defy both the story teller and her hearers to solve; and carelessness may put the whole tale in a tangle. It would almost seem as if in extra-uterine gestation Mother Nature made some such slip in her telling of the story of reproduction in the human female. No doubt the anatomical separation of the ovary from the Fallopian tube has some compensatory advantage to put over against the evident disadvantage of such a break in the path along which the ovum has to travel till it reach the uterus and meet with the sperm; no doubt also menstruation is a higher development than the œstrus. Nevertheless they introduce complexity and necessitate very fine mechanism, and the risk of a break down somewhere is not little. The continuous development of an impregnated ovum in the Fallopian tube constitutes an almost impossible situation: *almost* impossible, for with an increase in our knowledge of the pathology of extra-uterine pregnancy has come the conclusion that Nature does sometimes succeed in staving off the immediate danger to the mother at least; by the death and withering of the ovum in the tube or by its expulsion as a tubal abortion into the peritoneal cavity or into the uterine interior the situation is to some extent saved. Even if allowance be made for these cases there still

remain many in which the knife of the surgeon is needed to remedy the anomalous state of affairs arising from the growth of the impregnated ovum in the Fallopian tube; and during the past quarter of a century a great mass of literature and experience has grown up round the subject of tubal or ectopic gestation. The accumulation of experience goes on apace and every month sees additions being made thereto; to some of the more recent additions it may be well to direct the attention.

A. Pinna Pintor (*Annali di ostetricia e ginecologia*, xxii. p. 103, 1900), for instance, reports a case of extra-uterine gestation in which there was rupture of the tubal sac at the third month with **arrest of** the ensuing **hæmorrhage** in what may be called a natural but exceedingly curious manner. The patient was a VII-parous married woman of thirty-seven years, who had had a normal previous obstetric history. Pregnant for the seventh time, however, she stated that she felt different from what she had done in her other pregnancies, and at the third month she was suddenly attacked with most acute pain in the lower part of the abdomen and fainted. She had all the appearances of internal hæmorrhage, but gradually these phenomena passed off to be followed by a period during which there were signs of peritoneal irritation with vomiting, a distended abdomen, pain, etc. These also subsided, leaving the patient with a swelling in the right iliac fossa. At the time of the first acute symptoms a discharge of blood from the genitals took place along with the expulsion of a kind of membrane, which unfortunately was not examined microscopically. Menstruation was re-established later, but some symptoms of abdominal discomfort remained, and the woman came into hospital. It was then found that the uterus was slightly enlarged but in normal position; at the right side of the uterus was an oval tumour the size of the fist, moveable, and separated from the uterus by a distinct sulcus. The diagnosis of tubal pregnancy interrupted at the third month was arrived at from the consideration of the history and the physical examination, and the abdomen was opened for purposes of treatment. The bladder, omentum, small intestine and appendix vermiformis were adherent to the swelling on the right side of the pelvis; after they had been separated the swelling was found to be a greatly distended Fallopian tube through an opening in the wall of which near the external or abdominal end the head of a small fœtus protruded. The sac itself contained a large blood clot, but there was no clot in the pouch of Douglas; both the ends of the Fallopian tube were impervious. The fœtus showed some adhesions with the walls

of the tubal sac with which, through the escape of the liquor amnii, they had come into close contact. The conclusion to which one is forced by this case is that the sac ruptured at the time of the acute pain and fainting, but the usual sequelæ did not follow because the head of the fœtus plugged the rupture, acting as a tampon, and so prevented further and fatal hæmorrhage into the peritoneal cavity. The fœtus died and set up localised pelvic peritonitis. This is a very uncommon accompaniment of tubal rupture, for in most cases the rupture is complete and the hæmorrhage from the tube into the peritoneum is so great that the patient dies from it if not immediately operated upon; or else the ovum is expelled into the peritoneal cavity through the ostium abdominale without rupture. At the same time the author is in error in thinking that only one similar case is to be found in literature, that reported by Wiedersberg, for Dr N. T. Brewis kindly gave me a specimen of a like kind some years ago which I showed at a meeting of the Edinburgh Obstetrical Society (*Trans. Edinb. Obst. Soc.*, xvii. p. 242, 1892). In this instance the tubal rupture had occurred some days before the operation and the fœtus had escaped through the rent as far as the head which had plugged the opening and so checked the bleeding; the fœtal body and limbs had acquired adhesions with the surrounding viscera and there were dislocations of the fœtal joints. It differs from Pintor's case only in the fact that the fœtal body, instead of the head, was the part to escape first and block the opening in the tubal sac. The cases serve as interesting examples of one of the ways in which Nature, so to say, tries to correct or at least to make less injurious the primary error of a tubal implantation of the impregnated ovum. It may be added that the operative interference was quite successful.

J. A. Doleris (*La Gynécologie*, v. p. 203, 1900) raises some novel questions in his contribution on the **treatment** of ectopic pregnancy. He points out the importance of ascertaining the position of the ovum in the tube, for when the implantation is in the inner or middle part, rupture, if it occur, is the cause of great and immediately dangerous hæmorrhage, while when it is in the outer third or in the ampulla great bleeding is less marked and only happens at a later date in the pregnancy (fourth or fifth month); the tubo-fimbriary or tubo-abdominal form gives rise to the least sudden and the least dangerous kind of bleeding, and in it the gestation may be prolonged and may even reach term. Tubal abortion, although not truly a rupture of the tube, may occasionally give rise to a considerable amount of hæmorrhage. Doleris met with two cases in which there was more than a litre of blood in the abdomen. Another

point dwelt upon is the height of the tubo-fœtal sac in the abdominal cavity, and the author states that save in the tubo-fimbriary and ampullar varieties the tubal gestation always occupies a high level in the pelvis and can be easily felt through the anterior fornix; when they rupture the tumour occupies the hypogastric zone and the hæmorrhage is profuse; but the tubo-fimbriary varieties always are found early lying in the pouch of Douglas and hæmorrhage from them is more limited, being held in check by adhesions. With regard to the method of operative treatment, the vaginal route is to be preferred only for early and small tubal pregnancies situated low in the pelvis and relatively movable; the abdominal route is the one to be more generally adopted and gives more security. Its indications are: the abdominal situation of the tumour, its large size and age, and cataclysmic hæmorrhage. Doleris believes that it is possible sometimes to diagnose the part of the tube in which the ovum is situated, at any rate before rupture has taken place, but at the meeting of the Parisian Society of Obstetrics, Gynecology, and Pediatrics following the one to which his contribution was communicated, Pinard threw some doubt upon this, pointing out that the diagnosis of ectopic pregnancy is itself often extremely difficult (*La Gynécologie*, v. p. 264, 1900).

J. L. Faure also deals with the question of the **treatment** of extra-uterine pregnancy (*La Gynécologie*, v. p. 218, 1900), and attempts to decide which cases should be attacked by laparotomy and which by colpotomy. With regard to an extra-uterine pregnancy developing normally there can be no difference of opinion: it is to be looked upon as a tumour, and even as a malignant tumour, and is to be treated by laparotomy, and laparotomy as soon as possible. The question of how the placenta is to be dealt with cannot be so certainly settled, but Faure thinks that generally the attempt should be made to remove it rather than to marsupialise the pouch and leave the placenta in it; of course the hæmorrhage from its separation is sometimes truly terrible, especially when it is large and the fœtus alive up to the time of operation. In ruptured extra-uterine pregnancy with hæmorrhage into the peritoneal cavity the indication is also quite clear—immediate laparotomy. "Il faut donc les opérer le plus tôt possible, et les opérer toujours." In another group of cases, those namely in which the rupture has occurred some time but not long before the possibility of interference and in which the accidents following rupture have not been certainly and completely arrested, laparotomy is to be preferred to colpotomy. On the other hand, where the rupture is a matter of some age and where there is arrest and

even retrocession of the phenomena following it, colpotomy is to be chosen; the same remark applies to the cases in which there is probable infection or suppuration.

Notwithstanding the immense mass of observations of ectopic gestation which has been brought together, altogether exceptional and almost unique cases are still being reported. Pozzi for instance, has recently described a case in which he opened the abdomen for the removal of a tumour the size of a fœtal head and of a fibrous consistence lying above and to the left of the uterus; it had been causing much pain to the patient. It had a black colour and the appearance of an ovarian cyst with a twisted pedicle. It was discovered to be a tumour of the right Fallopian tube which had been displaced to the left and had its pedicle twisted once from right to left. It weighed 330 grammes and when removed was found to be a tubal pregnancy. Pozzi believes it to be the first reported case of **ectopic pregnancy** with **twisted pedicle** (*La Gynécologie*, v. 264, 1900). Another rare although not unique observation is that made by H. M. Lufkin (*American Journal of Obstetrics*, xli. p. 289, 1900). It was a case of early rupture of an extra-uterine pregnancy (either at the ninth or thirteenth week in all probability), in which the fœtus developed free in the peritoneal cavity up to term. Laparotomy was then performed and a living infant removed which cried feebly and succumbed in four hours. The placenta was taken away at the same time, and the mother made a good recovery. The fœtal head was compressed transversely, one foot showed talipes calcaneus and the other talipes varus, and one hand was sharply extended laterally; otherwise the baby was well formed. It did not appear that in this case the fœtus had been protected in the peritoneal cavity by any amniotic sac at all, a circumstance which is in opposition to the generally accepted view that "the protection of the unruptured amnion appears to be absolutely indispensable for development."

In the **treatment of full-term ectopic gestation** E. B. Cragin is of opinion that the child should receive more consideration than it generally does at the hands of the operator (*American Journal of Obstetrics*, xli. p. 740, 1900). He first answers the question "Is the viable ectopic fœtus worth saving?" in the affirmative, and cites three cases. In two of these the fœtuses weighed 4 lbs. 12 oz. and 4 lbs. 14 oz. respectively, and were quite free from any malformations; in both the fœtus was dead before operative interference was undertaken. In the third case the fœtus was alive at the time of the performance of laparotomy and was extracted alive. Notwithstanding that it weighed only 4 lbs. 3 oz., it survived and in the incubator reached the weight of 7 lbs. 4 oz. in three months. Further it showed a

congenital dislocation of the left hip and a small umbilical hernia; the latter of these malformations was nearly cured when the child left the hospital. This was really the worst of the three infants, and yet it survived its birth when care was taken of it. Cragin also believes that within limitations attempts to save the child do not seriously increase the mortality or morbidity of the mother. The chief risk is from bleeding from the separation of the placenta when the fœtus is alive, but statistics do not support the conclusion that there is a greater maternal mortality from this cause. The general conclusion therefore is that in a case of ectopic gestation which has advanced to the seventh month or later the best time to operate, if the fœtus be alive, is about eight and one half months in the absence of any unfavourable symptoms, while if the fœtus be dead it is wise to operate from two to four weeks after the fœtal death. With regard to the method of operation the only point likely to give rise to discusion is the management of the placenta: when the fœtus is alive, if the placenta be spread out over the large pelvic vessels or over the intestines, it will be best not to attempt to remove it at once but to marsupialise it, pack the sack with iodoform gauze, and irrigate with peroxide of hydrogen; when the fœtus is dead the placenta and generally all the sac can be safely removed at once. Taking all these facts into account Cragin believes that in the management of full-term ectopic gestation the child should receive more consideration than it at present enjoys.

C. E. Manierre and M. Herzog have a paper (*American Gynæcological and Obstetrical Journal*, xvii. p. 27, 1900), in which they deal with cases of **ectopic gestation** at the other limit of intra-uterine life from those considered by Cragin, *i.e.* **in the first two months.** Manierre believes in immediate abdominal section and removal of the pregnant tube in all the cases which are diagnosed before rupture. He cites two cases in support of this conclusion and from the microscopical examination of the removed tubes and from other specimens, Herzog makes the announcement that the most frequent primary cause of disturbance of the nutrition of the ovum and of the interruption of tubal pregnancy is neither rupture nor abortion, but hæmorrhage from the tube wall or gestation sac into the intervillous spaces. If we could diagnose the occurrence of these intervillous hæmorrhages by any characteristic set of symptoms, we might step in in good time to operate and so save the patient from the great risks of subsequent rupture. In the absence of any such set of characteristic symptoms Manierre's recommendation of immediate laparotomy upon diagnosis of the presence of the tubal pregnancy must hold good.

DERMATOLOGY

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The Parasitic Origin of Eczema was the first subject set for discussion at the fourth International Congress of Dermatology, which met in Paris simultaneously with the thirteenth International Congress of Medicine. Unna, Jadassohn, Galloway, and Brocq had been invited to "report" on the subject, and their views were summarised and presented to the Congress by the Parisian reporter Brocq.

Most interest, however, attached to the remarks which each made verbally to the Congress.

Unna assumes that eczema is definitely due to the growth on the skin of a micrococcus (his morococcus, from *μορον*, a mulberry), and finds the explanation of the difficulties so many have in accepting his theory in the absence of some means of distinguishing between pathogenic and harmless cocci found on the skin. He laid before the Congress a scheme in which he laid stress on the mode of increase in numbers of the cocci. Starting from the diplococcus and the sarcina, he found that certain cocci showed a tendency to group in sixes and eights, which they preserved over generations. He demonstrated cultures from cases of eczema showing the pathogenic and the saprophytic organisms, and a painting of a successful inoculation on the person of his laboratory servant who bears the famous name of Kruger.

Jadassohn understood by "parasitic origin," a disease which could not be produced without the action of micro-organisms, although there might be other factors of importance. The definition of eczema, he pointed out, rested on one positive character—inflammation of the superficial layers of the skin—and on many negative characters—the absence of any definite etiology, of any typical development or of special histopathological characteristics. These difficulties have led to the separation from eczema of certain maladies—E. marginatum, Prurigo, Impetigo, Seborrhœa corporis, etc. He did not regard the separation of dyshidrosis as justifiable. Artificial dermatitis he put aside altogether. For the rest of the cases, the most numerous of all, he was good enough to commend the writer's definition of the "disease."

The results of the investigation of his assistant Frederic were briefly as follows. In crusts and scales there were found frequently Unna's "morococci." On cultivation they obtained pure cultures of the staphylococcus aureus or albus, or a mixture of both. Only on one occasion did they find a moro-

coccus complying with Unna's description in the manner of its growth in gelatin. He and Frederic found altogether three varieties of coccus—albus, aureus and the S. epidermidis of Welch. Not much importance, they think, is to be attached to this latter as a cause of eczema. Streptococci were found in a large proportion of cases (53·7 %).

His conclusions were, that in many cases of eczema, there were lesions where modern methods were unable to demonstrate the presence of any organism and where we must assume the influence of local or general predisposition.

In many cases the invasion of organisms habitually found on the human skin could be demonstrated. The consequence of this invasion depended on the degree of virulence of the organism, on local or general predisposition, and on the nature of the original process. Variation in these led to great varieties in the form of reaction of the skin.

Galloway had confined his observations, for the purposes of this discussion, to the observation of acute papulo-vesicular eczema. In four cases carefully observed, he found a white coccus—in one case also the white torula and the penicillium glaucum, and in another the S. aureus. The organism for cases I. and III. and II. and IV. resembled each other, and the two groups presented certain distinctions, especially in their growth in gelatine and in their microscopic characters. Coccus A was a typical staphylococcus and liquefied the gelatine rapidly and completely. Coccus B tended to the diplococcus form, and the liquefaction was slow and incomplete.

After cultivating through several generations inoculations were made on mice. Mouse A developed an abscess at the point of inoculation in seven days and died in thirteen days —a pure culture of the organism was got from the spleen. Mouse B at the end of a week showed extensive œdema of the skin, but no breaking down. Death in fourteen days, cocci recovered from the spleen. He claims that the result of these experiments is to show that an attempt to establish specific differences between the cocci is not warranted. In later stages of the disease, other organisms, especially the S. aureus appear, sometimes in such numbers as to crowd the white coccus out of existence. He believes that the local infectivity and chronicity of eczema are probably mainly due to the presence of these organisms, but that in the production of any attack other factors are probably concerned, of which two are of special importance: first the predisposition of the skin "usually associated with the seborrhœic state," and second, imperfect metabolism due to improper digestion and assimilation of food.

Brocq and **Veillon** devoted the first part of their paper to a consideration of the significance of the word eczema and of the propriety of including or excluding certain diseases under the name. With most of his exclusions we fancy he would find few to disagree.

As to the question of organisms his researches showed—

1. That recent, unopened vesicles contained no microbes.

2. Old broken down vesicles contained numerous and abundant cocci; especially the S. aureus, but also the S. albus and streptococci.

3. He could not identify any organism corresponding to Unna's morococcus.

4. The same organisms were found isolated on the healthy skin of eczematics and on healthy individuals.

5. They are found on all sorts of diseased skins.

6. But they seem, especially the S. aureus, to have a special predilection for eczematous skins.

7. If after disinfection of a patch of eczema it be covered with sterilized oxide of zinc, the eczema continues to develop although no organisms are found in the exudation.

8. He has never been able to produce eczema on the healthy skin of an eczematous subject by the inoculation of a culture of the staphylococci.

9. The inoculation of a culture of these staphylococci on a patch of eczema produced numerous pustules and not vesicles.

After some discussion of the recent work of others he concluded that the presence of a specific microbe or eczema remained to be demonstrated, but that it was certain that the organisms which appeared later were largely responsible for the complications, especially the purulent ones.

Kaposi said that before 1890 everyone knew that there was a parasitic form of eczema—Eczema marginatum, which was due to the growth of a hyphomycetic fungus. (Most people call this ringworm and not eczema.) Then came Unna with his creation of seborrhœic eczema and introduced confusion. Kaposi did not throw much light on the subject under discussion.

Audry did not think it possible to "create" eczema, and he thought Unna's seborrhœic eczema ought to be completely separated from true eczema.

Saboraud demonstrated a series of plates representing the histology of different stages of the eczema vesicle to show that in the early stage the affection was amicrobic.

Petrini de Galatz had examined the blood bacteriologically in acute eczema, with negative results..

Morgan Dockrell, whose sections and drawings irresistibly reminded one of Samson's complaint about the use of his heifer,

was of opinion that Unna's morococcus was a staphylococcus, that organisms were only found deep down if there was a fissure and that no organisms were to be found in the fresh vesicles. He was equally sceptical as to the effect of the S. aureus.

Whitfield had directed his researches to the dry discoid form which appears on the face of young infants. In twelve cases he demonstrated the presence of a coccus 4-6 μ in size, often taking the diplococcus form and growing in a whitish or yellowish streak, on agar or gelatine, the latter of which it did not liquefy. It did not kill a guinea-pig, and inoculation on the arm gave negative results.

At this stage M. Brocq rose and said he was happy to inform the Congress that Saboraud had come round to his views, and that the French school were all now of one mind.

Neisser paid a very graceful tribute to the value of Unna's work on seborrhœic eczema which he regarded as a distinct mycotic infection. Further, he pointed out that there was no *one* malady which deserved the name of eczema. After what he had heard he must admit that there was an affection which could be produced without the aid of microbes, but this primary stage was not all the malady, and he believed that in the late stage the organisms played an all important rôle.

Hallopeau said that there was one variety of eczema of which the contagiousness was undeniable, viz., that of washer-women, etc.

The rest of the discussion was informal and the Anglo-Saxon custom of saying all one has to say in one speech was honoured in the breach.

To sum up the matter: are we any further on as the result of this collective investigation and discussion?

The results of the different observers are at the same time wonderfully alike and wonderfully different. The bacteriology of the skin is more difficult to investigate than that of almost any other organ, and one cannot but feel that the inclination of the observer will come into play in the greater or less vigour of the preliminary disinfection before the inoculations are made. It is at least remarkable that some always found organisms and some never. The word gout was not mentioned once during the discussion, nor was teething, which will be subject for regret to many who have been in the habit of falling back on these old standbys. It hardly seems such a matter for congratulation as M. Brocq seemed to think that the French school is all of one mind on the subject. In our present state of ignorance on the subject we should rather welcome any new theory which promises to throw light on the subject, and we are

happy to say that in this country we are not all alike in our views. However M. Brocq spoke too soon, for Hallopeau and Leredde subsequently gave their adhesion to the parasitic theory.

Undoubtedly the main interest settles around this white coccus which has been found by different observers in so many different countries (including Scotland), and the discussion will stimulate further investigation of its properties. I cannot say that I was convinced by M. Brocq's non-discovery of any organisms in the early stages of the disease. My experience has been that at first the organisms are very superficial, just where they would be easily removed by any preliminary disinfection, and that later they are deeper down where no amount of disinfection will remove them. Then there must be investigation as to whether the organism is or is not a variety of the staphylococcus albus. At present it seems too much the fashion to assume on what appears to me wholly insufficient grounds that it is. Galloway produced by one organism an abscess in the skin, and by another an extensive œdema, and yet, M.A. of Aberdeen though he is, he concludes that there is no sufficient evidence to differentiate between them.

What we require are further investigations by competent unprejudiced observers, not to prove that Unna is wrong or that Saboraud bases his conclusions on insufficient premises, but to sift the facts in the light of their work and the work of others, and dare we suggest that it would be well to enlist the aid of really experienced bacteriologists who are familiar with the infinite variation to which even such apparently specific organisms as the cholera bacillus are liable.

There was just one thing on which practically everyone was agreed, viz., the important rôle played by organisms once the malady was established, and from this we may deduce the useful fact that cleanliness and antisepsis are of more value than the old-fashioned advice to avoid water.

Notes on Foods, Drugs, &c.

BRITISH MEDICAL ASSOCIATION

THE ANNUAL EXHIBITION

THERE are some who affect to despise this department of the annual meeting and who never look near the Exhibition. But there is a good deal to be learned by one who will give a little time to investigating the various novelties that there are presented.

This year the Exhibition was unfortunate in being cut up into sections, for Ipswich had no one large enough hall to accommodate all.

The prominence given to foods in the list of exhibits was on this

occasion amply justified. Foods, in various forms, were the most striking feature of the Exhibition. In addition to old friends, such as **Mellin's, Bovril,** etc. there were **Lemco,** which is Liebig's Extract of Beef, under a new name, and **Virol,** a product of the Bovril Co., composed of red bone marrow, malt extract, eggs, and lemon juice, which it is claimed should be especially useful in rickets and in the treatment of summer diarrhœa and anæmia. **Cadbury Bros.** showed their cocoas and chocolate which we referred to in a previous number of the *Journal*, and **Callard & Co.** their well-known diabetic and other foods. The **Infant and Invalid Food Co's.** product is exceptionally rich in digestible carbohydrate; **Keen, Robinson & Co.** do their best to push the sale of Scottish oats among the Sassenachs; and **Nestle's** Food is supported by favourable opinions of such authorities as Ringer, Leube, Senator and Wurz. A Scottish exhibit, hailing from Upper Greenock, is **Marvis,** a dried preparation of fish which appears to keep well and which makes quite a palatable fish soup.

Plasmon and Protene are milk preparations not very distantly related. The latter claims the support of the ultra patriot as it is "made in England," and it has further the approving report of more than one British independent opinion as a reliable food for diabetics. **Worth's Food Syndicate** was a new name to us. They exhibited diabetic, anæmic, dyspeptic and invalid foods, which from the seat of their manufacture (Cheltenham) are named "Cheltine."

Gilbert, Kimpton & Co. showed "Milkine" Tablets composed of milk, malt and meat, each tablet being the equivalent of an ordinary light meal. Evidently the time is not far distant, foreseen by Miss Imogene Q. Larkspur in "They call it Love," when we shall be able to save the time now wasted on our meals.

Hoff's Malt Extract is a liquid food so well known as hardly to require mention.

The British Somatose Co.'s preparations are becoming more and more favourably known. We have used Somatose with benefit in cases of severe illness and we find that observant nurses have a preference for it over other artificial foods.

Tropon is another German preparation which comes with high testimonials as to its efficiency. The biscuits made from it are by no means unpalatable.

Van Abbots & Sons' diabetic foods are old friends and they also showed numerous other dietetic preparations such as condensed turtle soup, meat lozenges and hypophosphite of lime biscuits, which even the most suspicious child might take without suspicion.

Last but by no means least important, the contractors to the War Office, **Messrs Brand & Co.,** exhibited their well-known essence of beef, mutton, chicken, etc., invalid turtle soup, and their savoury meat lozenges which have been largely used in South Africa. Their preparations have the reputation of being a little dear but they are at any rate very good.

To come to drugs, the first thing noticeable was that one or two among the best known firms were conspicuous by their absence. No doubt they know their own business best, but one was sorry not to have the opportunity of seeing and discussing with their representatives their latest products.

No. 1. on the catalogue was **Messrs Oppenheimer, Son & Co.,** who had a large exhibit of their well-known palatinoids.

Among their novelties were palatinoids of Ferrous Carb., which are much cheaper than the well known Bi-palatinoids of the same. We can only hope that they will prove equally efficacious. They also showed, Traumatol (Cresylic Iodide), a non-poisonous antiseptic which has met with great favour in Paris, where it has been adopted for use in the municipal hospitals. Their Aerizer and Globe Nebulizer are improved sprays, and

are really useful. "Cerettes" are palatinoids of ointments and soaps and are portable, clean and convenient.

The **Wm. S. Merrell Chemical Co.**—a new American invader—exhibit their pure salicylic acid and its compounds, made from natural sources. More than one well-known Scottish physician have very strong views on the superiority of this to the artificial products generally in use. They also showed several preparations of American drugs which are not yet in common use in this country.

Fairchild Brothers & Foster had for inspection and trial their well tried Panopepton of the value of which we can speak from personal experience as a most sustaining food, both in sickness and in health, having cycled many a mile on it. Their digestive preparations, which have been previously issued as "Tabloids" by Burroughs Wellcome & Co., will in future be known as "Pepules."

Parke, Davis & Company had a well displayed exhibit of their well-known preparations. Chloretone, a hypnotic and local anæsthetic we propose to submit to a thorough trial, as also Mercurol and Nargol, combinations of mercury and silver with nucleinic acid, discovered by Dr Schwickerath, which do not precipitate albumen, and should therefore have all the greater penetrative power. Their anti-toxins are put up in hermetically sealed glass bulbs, and are exceedingly satisfactory.

The Bayer Company—it is remarkable, and not altogether satisfactory to the Briton, to see how many foreigners are so prominent in this country—had a prominent position in which to show their products. Many of them are so well known as not to require any further notice. Trional, Salophen, Protargol, and Heroin we referred to in a previous number, in which we promised a further note on Aspirin, a substitute for salicylic acid and its salts. The result of the trial was to show that it was at least as efficacious as these, and the patients on whom it was tried and who had had previous experience of the salicylates preferred it to them.

Hewlett & Sons showed their well-known "Mist Pepsinæ Co. c. Bismuthi" and other preparations. A "Mist Hepatica Co." is, we venture to think, not the sort of thing which will commend itself to the profession. They also showed a useful Urinary Test Cabinet, and, among their new drugs, Naftalan, which claims to be a substitute for Oil of Cade.

Among the most interesting exhibits were those of surgical instruments, among which we saw no Scottish representatives, an economical error, we think.

John Weiss & Son, Down Brothers, J. H. Montague, Arnold & Sons, and **The Surgical Supply Association** had each well displayed exhibits where one could see and handle all the latest improvements in the surgical instrument line. The Automatic Cautery, shown by Mr Weiss, is a most ingenious instrument, and well worth the money it costs.

Harry W. Cox, Limited, showed their X-Ray Apparatus as in use in most of the South African Hospitals. We only wish all X-ray coils worked as well as those which they had on view. **The Dowsing Radiant Heat Company** was the only other electrical exhibit. They had a very complete and instructive display of their apparatus. Unfortunately it was out of the way, and probably many missed a useful demonstration of what has proved to be a valuable method of treatment in suitable cases.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

THE PLAGUE

By W. LESLIE MACKENZIE, M.A., M.D., D.P.H.,

Medical Officer of Health for the Burgh of Leith ; Medical Superintendent and Physician to the Burgh Fever Hospitals

1. *Historical Identity.*—No doubt now remains of the historical identity of modern and ancient plague. The cases in Glasgow are of the same parentage as the cases of the London plague two centuries and a half ago. The environment is not the same ; the housing, the cleansing, the lighting, the trading, are not the same ; the methods of recognition are not the same ; the defences are not the same ; but the symptoms are much the same, the clinical varieties are the same, and the unitary cause of all is, we are justified in assuming, the same. These facts make a difference. Plague is still a terror, and properly so ; but it is a terror now under better control. The attitude of the official organisation towards it is the attitude of the master. Glasgow, directly and indirectly, will lose thousands upon thousands of pounds ; but Glasgow has risen to the occasion, and the persistent hourly application of her vast resources and elaborate sanitary police will, with the general mind all alert and tense, succeed in keeping this treacherous disease within small limits. And that too without sacrificing individual rights or the principles of civil liberty. I speak from first hand observation of the work as it is carried on.

2. *Imperial Defences.* — The three great international diseases—plague, cholera, yellow fever—are regulated by an

order of the Imperial Government. These three are none of them endemic in Britain ; they can enter only by a seaport, and as all the leading seaports are Customs ports, the Customs officers form the first line of defence. Every vessel from an " infected port," that is a port infected with plague, or cholera, or yellow fever, is challenged by the boarding officer, who asks certain definite questions from the Master, who, in turn, must answer correctly under heavy penalties. If any case of plague, or suspected plague, or any case of illness exists on board, the Customs officer stops the vessel ; he reports the facts to the Medical Officer of Health for the port, who in most cases is (as in Leith) Medical Officer of Health for the Local Authority nearest ; the Medical Officer of Health must visit and examine within twelve hours ; from the time he boards the vessel until he completes his examination, the ship is under his directions. If the Medical Officer of Health finds a case of plague on board, he has full powers to order the ship to anchor by the quarantine buoy, to remove the case, to remove suspected cases, to disinfect, to retain suspected cases until the nature of the disease is ascertained. He also takes the name and address and destination of every person that wishes to leave the ship, forwards these, *per* the Local Authority Clerk, to the Clerk of the Local Authority of the place of destination of each person, and thus secures that a certain amount of supervision is exercised all along the course. Usually sailors are ready enough to go to hospital rather than leave ; but this freedom of movement has been evolved out of long experience of the tendency to concealment and evasion. Concealment and evasion, however, are much commoner among passengers than among crews. As an instance, a gentleman recently informed me that he once came from abroad, on a ship carrying a supposed " typhus " dead body badly coffined ; that he came ashore by tug so as to avoid delay ; and he seemed to imagine that, in evading his civic duty of informing the authorities of a possible danger, he was doing a very smart thing. His information about the "typhus" was probably of the same value as fourth-hand lay information usually is, and his vague ignorance of " quarantine " was enough to spoil the working of his normal conscience. He was a passenger. In six years of pretty active port work, I

have almost never found a master or officers that were not quite ready to reveal every important fact of their voyage. The shipping companies are only too anxious to keep themselves right with the law. Sometimes a supercilious Master, who knows more about the plague than any half-dozen Medical Officers of Health, will talk large, and pretend he is in an immense hurry, and generally protests against the absurdity of examining healthy men. He usually climbs down by the end of the day and the examination of his crew takes double the time. But this type is the exception.

If, however, a ship enters harbour without suspicion, the Medical Officer of Health still has a reserve power: if he suspects that the ship is infected, or comes from an infected port, he may examine the vessel and cause bilge water and water ballast to be pumped out, etc. The number of ships, however, that escape the lynx eyes of the Customs Officers is very small.

3. *Quarantine.*—In British ports, quarantine as understood abroad is not legal and is not practised. Every object of quarantine is attained by the method I have sketched above. Such quarantine as is practised at all, is carried out on shore; the ship is set free at the earliest possible moment, and thus the interests of the commercial community are little injured. But the stringency of quarantine abroad undoubtedly makes the home companies more careful of their crews. Thus at Alexandria and Oporto last year, sailors were as a rule not permitted to land from their ships. Often they did land, no doubt, since the sailor is usually not characterised by too much discretion. When, however, as in an Alexandrian case known to me, a sailor is stranded and has to find a passage home, he is not only isolated and washed beyond all reason himself; he is the cause that others are likewise treated, and the ship is, as a rule, in better trim than if nothing had happened. But for all the stringencies of foreign quarantine, the western ports have not succeeded in keeping out the plague. Alexandria, Smyrna, Oporto, Sydney, Durham, Lourenço Marques, Mauritius, Madeira, Capetown, have all failed. What is the danger?

4. *Chief Source of Danger.*—Glasgow has revealed the chief source of danger, namely, the mild ambulant case. As with small-pox, so with plague: anyone recognises the typical case;

no one recognises the extreme atypical modification. By good fortune wakes are not yet obsolete; therefore the quick succession of cases revealed the situation. But for this fortunate bad social habit Glasgow might, in a few weeks, be reckoning cases, not by groups of one and two, but by groups of tens and hundreds. The original case of the Glasgow outbreak has not been discovered, and probably will not be discovered. This is not strange to those that know the extreme carelessness of life among the people affected. Care sits lightly on them when they are sober; when they are drunk, memory is the memory of dreams and experiences vanish like morning visions. Here are some extracts from the records of the outbreak.

5. *Dr Chalmers's interim report.*—

At last meeting of the Committee I reported that a careful study of the symptoms presented by three patients then in hospital gave rise to the conviction that they were suffering from plague. This conviction was ultimately established beyond doubt, and the following narrative describes the circumstances of the outbreak so far as at present known :—

A child and its grandmother (Mrs B.), living in the same house, 71 Rose Street, South Side, Glasgow, sickened suddenly on the evening of 3rd August, the child dying on the 7th and the grandmother on the 9th, the cause of death of the child being certified as "zymotic enteritis," and of the grandmother "acute gastro-enteritis." In both cases a wake was held, and the grandmother was buried on the 11th. Although the husband of this latter patient sickened on the 12th, he was only admitted to hospital on Monday, 27th August, certified "enteric fever," when he was recognised to be suffering from plague.

Concurrently with the later developments in this household, the following illnesses were appearing in the members of a family (M.), 57 Thistle Street, some of whom had either attended Mrs B.'s wake, or were present during the illnesses in her house.

On the evening of Sunday, 19th August, a child, Christina M., 10 years, sickened with acute symptoms which ended fatally at mid-day on the 21st. She was only medically visited, however, within ten minutes of her death. The symptoms were those of pneumonia, and the cause of death was certified as "acute pneumonia."

Before the child died the mother had already sickened (20th); a son (since dead) sickened on the 22nd, and a half-brother, a young child of 3 years, sickened on Thursday 23rd. These three were first seen by Dr Robertson, who had also seen

the child Christina, and later by Dr Colvin, who, on discovering that Dr Robertson had already visited, went to confer with him regarding the symptoms. The action in which this conversation ended is thus described by Dr Robertson :—

"We were satisfied that they were cases demanding the attention of the Sanitary Authorities, and I agreed with Dr Colvin that, having both seen them independently, we should both notify them as cases of Enteric Fever, with a mark of interrogation after it, to imply that the diagnosis was not definite, but that they were evidently of an infectious nature, and should be removed at once."

They were accordingly notified on 25th August, and removed to hospital same day.

On admission Dr Brownlee, the physician-superintendent, made a careful examination of the cases, which resulted in his coming to the conclusion that the patients were suffering from Bubonic Plague, although they were inhabitants of Glasgow, and there was no known case of Bubonic Plague in Britain. Dr Weir, Senior Assistant Physician at the Hospital, and Dr Knight, my assistant, concurred in the diagnosis. Dr M'Clure, Acting Superintendent of the Small-pox Hospital, immediately examined blood-films obtained by hypodermic puncture of the buboes, with the result that the typical form of the bacillus pestis was observed. Immediately on this conclusion being arrived at, Dr Knight visited the patient's house, verified the story of the illnesses and death, and arranged for the removal of the other members of the family to the Reception House for observation. Cultures taken on glycerine agar showed, by the evening of August 26th and the morning of August 27th, the typical appearance, both macroscopical and microscopical, of the bacillus pestis. Later in the week they were fully confirmed by animal experiments by Dr Muir, Professor of Pathology in the University of Glasgow, in the absence of our own Bacteriologist, Dr R. M. Buchanan. (Professor Muir's Report will be found at the end of this report.)

On the same day that these three cases were admitted (25th August), another woman (Mrs T., 23 Oxford Lane) had been admitted certified Typhus Fever. This disease was excluded on examination, and owing to the presence of an inflammatory condition in the left groin, and a history of recent confinement, the provisional diagnosis of Pelvic Cellulitis was entertained. Later, her association with the B. family was discovered, and the diagnosis revised in the light of the symptoms presented by these others.

Immediately the suspicion of plague was created, a medical examination was made of all persons who could be discovered

as having attended either the B. wake, or the wake of the child M., with the following results:—

1. Discovered ill in their own houses—
   (1) Two children (T.), sons of Mrs T. already referred to. One of these on closer observation proved not to be Plague.
   (2) A girl (M'K.), residing at 57 Thistle Street.
2. Removed to Reception House.

In all over 100 persons, who were not obviously ill, but had visited one or other of the houses named, were removed to the Reception Houses for observation, and four of them have since sickened (M., M'G., D., and R.). (For dates see Table which follows.)

Two additional cases, F., 77 Rose Street (admitted 29th August), and C., 1 Well Street, Calton (admitted 30th August), were afterwards brought under notice by medical practitioners, suffering from the disease, and, after examination, removed to Hospital. C. has an indirect connection, in respect of having slept in a house next door to that of the B. family, on 15th August, and F. is a jobbing shoemaker living in the adjoining tenement.

On 6th September, one of the "Contacts" under observation displayed symptoms of tenderness in the groin, and was removed to Hospital for observation. Phlebitis of the femoral vein there developed and cleared up the suspicion. On the following day a child was removed from Crookston Street with symptoms suggestive of pestis minor, and a history of indirect association with one of the wake-contacts. In eight of these cases the diagnosis of Plague has been microscopically verified. In the following Table, a family (D.), from 57 Thistle Street, is presently omitted, because of some uncertainty regarding the clinical importance to be attached to their symptoms:—

GLASGOW.—PLAGUE CASES, WITH DATES OF SICKENING AND EXPOSURE AS PRESENTLY KNOWN.

DEATHS AT HOME (*assumed to be due to Plague*).

Name.	Address.	Sickened.	Died.	Wake held.
(1) Baby in B. family	71 Rose Street	Aug. 3rd	Aug. 7th	———
(2) Mrs B.	,,	,, 3rd	,, 9th	Aug. 9th and 10th.
(3) Tina M. *	57 Thistle Street	,, 19th	,, 21st	,, 21st and 22nd.

* Attended the B. Wake.

CASES REMOVED FROM THEIR HOMES.

Name.	Age.	Address.	Sickened.	Removed to Hospital.	Where Exposed, &c.
B. (1) James B.	60	71 Rose Street	Aug. 12	Aug. 27	Wife died, 9th August.
B. (2) Pat. F.	56	77 ,,	,, 13	,, 29	A jobbing shoemaker near B.'s, but definite contact not traced.
B. (3) John C.	24	1 Well St., Calton	,, 17	,, 30	Slept in house adjoining B.'s on 13th August.
B. (4) Mrs T.	—	23 Oxford Lane	,, 12	,, 25	Relations and visitors at B.'s
(5) James T. *	9	,,	, 21	,, 29	
B. (6) Dennis T.	6	,,	,, 21	,, 29	
B. (7) Mrs M.	—	57 Thistle Street	,, 20	,, 25	Attended B.'s wake, child died at home on 21st Aug. (see above). Pat M. died in hospital.
B. (8) Pat. M.	—	,,	,, 22	,, 25	
(9) Wm. M.	3	,,	,, 23	,, 25	
(10) Annie M'K.	12	,,	,, 28	,, 29	At B.'s wake, and afterwards in house.
B. (11) Thomas H.	12	6 So. Coburg St.	,, 23	,, 29	At M.'s on 20th August.

B. = Bacillus obtained. * James has not Plague, but a gluteal abscess.

CASES AMONG "CONTACTS" AND SICKENING IN RECEPTION HOUSE.

Name.	Age.	Address.	Sickened.	Removed to Hospital.	Where Exposed, &c.
(12) Jane M.	14	—	Aug. 29	—	At M.'s wake.
(13) Arch. D.	—	—	,, 29	—	,,
(14) Patrick M'G.	18	—	,, 31	—	,,
(15) Agnes R	—	—	,, 31	—	,,

INDIRECT CONTACT.

(16) May M'L.	18 months	154 Crookston Street	Aug. 26	Sept. 6	Indirect contact (?)

NOTE.—This Table does not include a family (D.), removed from 57 Thistle Street on August.

At the present moment it is impossible to make any definite statement as to the source of the infection of the first two cases in the B. family. The husband of the elder patient was in the service of a local shipping company as a dock labourer, and employed by them at their wharves on the south side of the river. He was engaged exclusively on vessels trading between home ports. His illness only developed after his wife died, and may be regarded as resulting from this or from his grandchild's illness. His daughter, the mother of the child who first died, is said by her father to have been ill for two days shortly before

her child sickened. She now displays, one month afterwards, very slight enlargement of the cervical and axillary glands on both sides, which, compared with the glands of a normal girl—definitely non-infected—of corresponding age, indicate some irritative process recently active. This girl, meanwhile, stoutly denies any illness, and it must be remembered that she had nursed her baby for some time. The father of the child is an iron-worker in constant employment. He has had no illness, and presents no evidence of glandular enlargement.

[NOTE.—Since the above was written one case, clinically recognisable as plague, and verified by bacteriological examination, was admitted to hospital on Sunday, 9th current, and a girl, whose illness goes back to the 23rd of August, was removed the following day. These are not traceably connected with each other, or with any of the earlier wakes, and, taken in connection with the death in Govan during the last week of August, must be regarded as indicating that a strain of infection has obtained admission to the population from which each of these four groupings directly arise.

The means by which this strain of infection has gained access is presently conjectural only, but it is to be remembered that pestis minor, or the ambulant form of plague, is a disease characterised by few symptoms, and must frequently escape detection. In this connection the occurrence of several cases of sickness, with glandular affection, among the crew of a ship while in port here in May last, is being inquired into. Any opinion as to the character of an illness described after such an interval can only be formed after very careful scrutiny of the facts, but it is obviously most desirable, in the interests both of the shipping and the community, that all such sicknesses, when they occur, should be promptly brought to the notice of the Local Authority.]

The scheme of action approved of at the Special Meeting of the Magistrates Committee and the Committee on Health, held on 31st August, is being carried out in the following detail in the defined area, and, as then authorised, Dr Frederick Dittmar and Dr Alfred Webster have been added to the staff:—

1. Within this district special cleansing operations are being conducted in the following detail:—
   (*a*) Ashpits are being
      (1) emptied three times a week, and
      (2) washed once weekly with "Chloride of Lime Whitewash" (1 lb. "Chloride of Lime" added to 12 gallons of freshly-slaked lime solution of the consistency of milk).

(*b*) Back courts in dirty condition are hosed every night with "Chloride of Lime" solution, 1 in 100 (1 lb. "Chloride of Lime" to 10 gallons water). For this solution Chloros was often substituted, owing to a mechanical difficulty in the distribution of the mixture arising.

2. A special inspection of the district is taking place for the detection of dirty houses, closes, etc., and for overcrowding of houses.
3. Infected tenements, and, if necessary, those where "contacts" reside, are being dealt with as in 9.
4. Medical inspection of the district is being carried out; the occupants of the infected tenements, and all "contacts," are offered inoculation with Yersin's serum, and others in neighbourhood with Haffkine's prophylactic. Suspected cases are being seen with the Medical Attendants.
5. Plague has been added to the Infectious Diseases (Notification) Act, 1889.
6. Handbills are being distributed, offering the services of the Medical Staff at any time, on application to the nearest Police Office.
7. Efforts are being made, through co-operation with the surgeons of the shipping companies, to arrange for medical inspection of Lascars and other crews of ships from infected countries.
8. The detailed arrangements for the removal of cases and disinfection of infected tenements are under the personal supervision of one of the Medical Staff, and may be detailed as follows:—
   (*a*) Removal of patient to Hospital.
   (*b*) Removal of "contacts" to Reception House.
   (*c*) Fumigation of infected house by liquefied Sulphur Dioxide from 12 to 24 hours, the disinfectant being used in proportion to the cubic space dealt with.
   (*d*) After the fumigation the house is entered; all articles of clothing, etc., to be removed are first of all thoroughly wetted with 2 per cent. solution of Formalin (1 gallon 40 per cent. solution Formaldehyde to 50 gallons water), then wrapped up in sheets soaked in the same fluid and removed to the Sanitary Wash-house. There all articles which cannot be boiled or steamed, or treated with Formaldehyde, are burned.

(*e*) The walls, ceiling, flooring, woodwork, &c., of the infected house are also sprayed with the Formalin solution (1 gallon to 50 gallons water).

(*f*) All houses in the infected tenement are cleansed by the Department; the lobbies, stairs, and closes being dealt with by Formaldehyde or "Chloride of Lime" solution.

(*g*) Courts of such tenements are watered with "Chloride of Lime" solution.

(*h*) Ash-pits have contents watered with same and then removed and burned.

9. Clinical demonstration of cases in Hospital is given daily.

10. A pamphlet descriptive of the varieties of the disease has been prepared for circulation among practitioners.

11. The co-operation of Hospitals and other Dispensaries for the detection of doubtful glandular affections has been invited.

12. *Rats.*—Rat-catchers have been employed, and the existence of disease in rats is being enquired into.

A circular has been issued to Hospitals and Dispensaries intimating the presence of Plague, and directing the attention of the Medical Staff to the need for carefully scrutinizing all suspected persons; and one also to shipowners impressing upon them the desirability of having the crews of ships arriving from suspected ports abroad kept under medical observation while in port.

A. K. CHALMERS.

Sanitary Chambers,
Glasgow, 10th September 1900.

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6. *Professor Muir's Report*:—

BACTERIOLOGICAL AND PATHOLOGICAL REPORT ON THE CASES OF PLAGUE IN BELVIDERE HOSPITAL IN AUGUST 1900, BY ROBERT MUIR, M.D., PROFESSOR OF PATHOLOGY, UNIVERSITY OF GLASGOW.

In accordance with the request of the Public Health Committee, conveyed to me by Dr Chalmers on Monday, August 27th, I have investigated the Bacteriology and Pathology of the cases of suspected plague in Belvidere Hospital, and beg to report as follows. (A Preliminary Report was communicated to Dr Chalmers on Thursday, August 30th.)

In making these investigations my endeavours were directed, in the first place, to the separation and cultivation of the special bacillus from the cases, and, in the second place, to the determination, by scientific methods, of its identity with the bacillus of bubonic plague. In addition, I performed the post-mortem examination in the case of Patrick Molloy on Tuesday, August 28th, and have to state in brief the results of that examination.

In summarising the results it will be convenient to place them under the following three heads :—

(I.) The characters of the bacillus isolated in pure cultures —is it the bacillus of bubonic plague?

(II.) The presence or absence of that bacillus in the various cases examined.

(III.) The pathological changes in the body of Patrick Molloy.

I. The bacillus, cultivated, in the first instance, from Patrick Molloy, during life, was examined as regards the following characters :—

(*a*) *Structural Characters and Staining Reactions.*

Under this heading may be mentioned, size and shape, grouping in various cultures and in the tissues of the body, absence of motility, presence of polar staining, decolorisation by Gram's method, production of involution forms under various conditions, absence of spores, etc.

(*b*) *Cultural Characters.*

These were studied in various media, including agar, Harkin's salt-agar, blood serum, peptone-gelatine, and bouillon.

(*c*) *Pathogenic Effects in various Lower Animals*

As regards the various points enumerated under the above headings, the organism was found to correspond in every particular with the bacillus of bubonic plague, and I may especially state that the pathogenic results of the plague bacillus were reproduced in animals by inoculation with the pure cultures obtained from the human subject.

The result of these investigations is to demonstrate that the organism in question is without doubt the bacillus of bubonic plague.

II. I have examined nine cases bacteriologically. For this purpose I have punctured the affected glands, and have examined the fluid obtained both microscopically and by means of cultures.

The following are the results :—

In the cases of Patrick Molloy, Patrick Ford, Thomas Horne, and James Bogan, the bacillus of plague was found on microscopic examination, and also cultivated in a pure condition. In the case of Mrs Molloy, a few degenerated plague bacilli were found on microscopic examination, but I did not obtain cultures. Two days previous to my examination, however, Dr M'Clure obtained pure cultures of the plague bacillus, and the negative results obtained by me were in all probability due to the fact that the disease was in process of cure and that the bacilli were dying out. The five patients mentioned have thus been demonstrated to have suffered from bubonic plague, and it is of interest to note that in none of them was any other organism than the plague bacillus obtained from the glands.

The following were examined with negative results, viz.:— Dennis Tierney, Mrs Tierney, Archibald Drummond, and John Cunningham. (This does not prove, however, that these patients had not plague; in fact, the three last-mentioned were recovering at the time of examination, and, if they had plague, the bacilli would be few, if not entirely gone.)

III. On Tuesday, August 28th, I made a *post-mortem* examination on the body of Patrick Molloy. I found an almost general bubonic affection of the lymphatic glands, those especially involved being in the right armpit and in the neck. The glands were greatly swollen and inflamed, partly hæmorrhagic, and partly softened, while the surrounding tissues were the seat of inflammatory œdema and hæmorrhages. On microscopic examination, these glands were found to contain enormous numbers of plague bacilli. The spleen was swollen to twice its normal size. (It is unnecessary to give greater details—a full report has been entered in the Pathological Records in Belvidere Hospital). The sum total of the changes found are met with in no other disease than bubonic plague.

As a summary of the facts above stated, I have to report that, up to the present date, five patients have been proved by bacteriological methods to have suffered from bubonic plague, and that one of those (Patrick Molloy) died from that disease.

In conclusion, I have much pleasure in acknowledging the valuable collaboration of Dr M'Clure in the bacteriological work, and the kind assistance which I have had from Dr Brownlee, and other members of the staff of Belvidere Hospital.

ROBERT MUIR.

PATHOLOGICAL LABORATORY,
UNIVERSITY OF GLASGOW,
September 2nd, 1900.

7. *Subsequent Cases.*—Since these reports were written, some ten fresh cases, or more, have appeared; but the precise facts regarding these have not yet been made officially available.

8. *Clinical Record by Drs Brownlee and M'Clure.*—To Dr Brownlee must be given primarily the credit of diagnosing the first cases. And the credit is no small thing. To recognise a case in a sequence is a comparatively simple matter; to recognise it in isolation is neither simple nor easy. And in a matter so serious for the whole community, an error would have been a disaster; but the scientific method in diagnosis is as sure-footed as elsewhere, and the diagnosis had *not* to be revised. The detailed facts form a picture of the first clinical value, and for them we must refer our readers to the *British Medical Journal* for September 8th, page 686.

9. *Clinical Varieties of Plague.*—Dr Chalmers has published a small pamphlet on the "Clinical Varieties" of plague. The descriptions of experts are collated and digested; the importance of certain features is emphasized, and the general precautions against plague are detailed.

10. *Rats and Fleas.*—It is established beyond the possibility of controversy that the principal means of carrying plague from place to place within an inland area is rats and the fleas that infest them. How to keep rats down is, therefore, a sanitary problem of the first magnitude. A wise person has suggested that the rat is a good scavenger and thus serves a good object in the scheme of life. If a town is so badly cleaned, that it must rely on rats for its scavenging, the sooner the Imperial Government is advised of the fact the better. Nonsense like this carries little weight even with the newspaper public. But the methods of destroying rats have not been found particularly creditable to the genius of the rat-experts. The mongoose has been recommended; but we have not yet received much authentic information of its efficacy in this country. So far, however, the Glasgow rats have not afforded much clinical material; for Dr Buchanan, Municipal Bacteriologist, reports that he has not found the *bacillus pestis* in any rat killed or found dead in the defined area. This is hopeful. The end of the outbreak may be near.

11. *Sero-therapeutics of Plague.*—Yersin's serum is freely used in Glasgow. The method followed is intra-venous injec-

tion. It is premature to say anything of results; but enough is already known to justify one in stating that the clinical record, when it is completed, will be very striking. If the effects of intra-venous injection continue to be realised in future cases, the bubonic form of plague and, indeed, all its forms, are almost robbed of their terrors. For the moment, France—the Institut Pasteur—is the centre of the nations.

12. *Conclusion.*—The public confidence in Glasgow vigilance and energy should not be allowed to mislead. The plague is everywhere; because the parts infected with it are in daily converse with every important place in the eastern and the western world. Europe is continually under a menace. Glasgow will solve its own problems; but every local authority in Britain had better be putting its house in order. The profusion of arrivals from South Africa is no small danger. The army will come home and bring with it much typhoid and dysentery. It may bring the plague too. The stupid creatures that deprecate "alarmist" views are just those that run from the real danger. Our towns are none too clean, our rats are none too few, our streets are none too little strewn with foul dust, ashes, and paper, that we should give any quarter to the arm-chair sanitarian, who is "not as other men are." The price of freedom from plague is vigilance against dirt—and rats.

INTRODUCTORY ADDRESS

A RÉSUMÉ OF OUR KNOWLEDGE OF DISEASES TRANSMISSIBLE FROM THE LOWER ANIMALS TO MAN [1]

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THAT certain diseases are transmissible from animals to man has advanced from the region of theory to that of certainty, and has become a factor of great importance, demanding the consideration of the medical profession in their endeavour to prevent and limit infectious diseases.

[1] Delivered at the opening of the Winter Session of the New Veterinary College, Edinburgh.

One disease after another has had from time to time to be added to this category, so that the list is now of considerable length, too long, in fact, to be dealt with fully by me in the time at my disposal.

It will be of advantage to us, particularly in an audience of veterinarians, present and prospective, to spend some time in reviewing our knowledge of some of the most important of them.

The first disease of this class which suggests itself to all is, of course, *Tuberculosis.*

For our purpose, we may divide all animals into two classes; firstly, the domesticated, those which live to a great extent under cover, and secondly, those which live chiefly or altogether in the open air.

The former class embraces man who lives in houses; stall-fed cattle, pigs, birds, and other animals in a state of captivity.

The latter includes cattle kept in the open, sheep, dogs, goats, horses, the carnivora and other wild animals.

The former class may roughly be said to be susceptible to tuberculosis, the latter immune or insusceptible, and the determining factor appears to be the scanty or plentiful supply of fresh air and sunshine.

Man, if placed under unhealthy conditions of nutrition and environment, particularly if he, in addition, inherit a weak condition of body, becomes susceptible to infection, and this infection occurs either from another case of tuberculosis, when the infective poison—the tubercle bacillus—usually enters the body by the air-passages and produces primarily disease of the respiratory apparatus; or, and this especially concerns us to-day, he may become infected by way of the alimentary tract, by eating or drinking infected material.

The chief food materials of this nature are firstly, milk which has been infected from a case of pulmonary tuberculosis, or which has been taken from a tuberculous cow; and, secondly, the flesh of tuberculous animals.

Ten to twenty per cent. of all cows are tuberculous; in fact, in some herds a much greater percentage, even up to seventy and eighty per cent., has been reported.

A tuberculous cow will only give tuberculous milk when

its udder is diseased, and milk from cows in which the disease has not advanced so far may be consumed without bad effects, but the danger is that it is extremely difficult to tell precisely when the udder is attacked. When this has taken place the milk becomes actively virulent.

It is easier to define the limits of safety so far as the flesh or muscular tissue of such animals is concerned.

Muscular tissue is rarely affected by tuberculosis, and then only in very advanced cases of the disease. There are two possible explanations of this fact: firstly the acidity of the muscle, a condition in which the bacilli cannot develop; and, secondly, the rapid passage of ærated blood through the muscle, whereby it gets a greater supply of oxygen than most other tissues. Now the tubercle bacillus has some peculiarities. When it enters the body it likes to get far away from ærated blood and motion, into a dark, quiet, motionless corner, where in suitable surroundings it can develop. Again, it appears to require coadjutors, more active than itself, to produce the destructive lesions usually associated with it. It is now considered that of itself it tends rather to produce a local lesion which soon becomes quiescent and encapsuled by fibrous tissue; but that if it has other bacteria, such as the tetracoccus, or as has been lately stated, a streptococcus, these help it to destroy the tissue widely and kill the patient. Indeed the suggestion has been made that benefit might be obtained by the use of anti-streptococcus serum in the treatment of consumption.

Meat is usually infected after death, during the process of cutting up the carcase. While doing this, the butcher has to remove or cut through diseased lymphatic glands, and the knife carries with it virulent broken-down material from these glands, and smears it over the cut surface of the flesh.

It is easy therefore by boiling, or better by roasting, such meat, to destroy the organisms on its surface.

In Germany they make use of this knowledge, and meat from a tuberculous cow is boiled, under inspection, and sold at a cheap price as a perfectly safe and wholesome food. In this country we take no risks, but condemn the whole carcase.

Of these two therefore milk is by far the more important. Milk forms, or ought to form, the staple food of children up to

the age of seven or eight years, and it is at this period of life rather than in adult stages that infection by milk occurs. In most cases of injestion tuberculosis, as it is called, the bacillus attacks the intestine and spreads thence throughout the body; but it may, as it has been proved to do in the pig, enter through the tonsil, spread down the cervical glands to the chest, and thus cause disease of the lungs. Conditions resembling perlsucht in cattle, where the pleura is affected by this channel, are seldom met with in man.

It has long been taught that abdominal or injestion tuberculosis is more common in children than respiratory tuberculosis. Examination of the post-mortem records at the Royal Hospital for Sick Children negatives this, and shows that between two and three times as many children have died of injestion tuberculosis as of the respiratory form. This is of interest as proving that in children, as in adults, the great danger is from respiratory tuberculosis.

I may state that Dr George Still of London has independently come to the same conclusions.

Can we prevent "milk tuberculosis"? Safety lies in boiling all milk before using. Now in this country we have a prejudice against boiled milk, and when one takes day after day the over-cooked milk which is the rule in Germany, one does not wonder at it. But it is not necessary to boil away all the flavour of the milk. The tubercle bacillus cannot long resist a temperature of 75° C. So that merely raising the milk to boiling point, that is 100° C., and allowing it to cool, is sufficient to render it in most cases perfectly safe.

All people will not take this trouble, so that in some countries and districts attempts are being made to weed out tuberculous cows by means of the "Tuberculin" Test. In Denmark, which depends so much on its dairy-farming, this Test is rigorously exacted.

Tuberculosis naturally suggests another disease of the respiratory apparatus—*Diphtheria.*

While most cases of diphtheria have been infected directly from a previous case, or by infected clothing, in many cases infection is conveyed by means of milk. In certain of these the milk has been exposed to contamination from pre-existent disease in man, but most of the cases of "milk diphtheria,"

according to Mr W. H. Power and Dr Klein, are derived from the cow herself. In an epidemic in North London, Mr Power traced the source of infection to a "cowhouse in which one or more cows, notably those which had recently calved, had suffered from an ailment which was infective from one cow to another, associated with a rise of temperature and an eruption on the udder and teats. This eruption usually began in the form of vesicles which rapidly passed into pustules and scabs or crusted ulcers."

It was next found by Klein that a similar disease could be produced in the cow by inoculating it with cultures of the diphtheria bacillus. The discharge from the pustules so produced, and the milk of the cow, contained numerous diphtheria bacilli. These statements have not, so far as I know, been verified by other workers, so I give them with all reservation.

We must also recognise the domestic cat as a conveyer of diphtheria, and this case is altogether free from doubt. Many cases are reported in which human diphtheria has been derived from cats, and conversely it is undoubted that cats can contract diphtheria from man. Dr Bruce Low, in a report for the Local Government Board on an epidemic at Enfield, explained its causation in this way.

Scarlet Fever.—Here again for the source of infection we must occasionally look elsewhere than to an antecedent case in man.

Dr Klein, in investigating the Marylebone outbreak in 1883, found that the milk supplied to the families in which the disease occurred was derived from certain cows which were suffering from a peculiar disease which he considered the analogous of human scarlatina.

Thomas has also stated that a disease corresponding to human scarlet fever has been met with in horses, dogs, cats, swine, and other domesticated animals. Dr Carger, in his article in "Allbutt's System of Medicine," states that he is convinced that cats at anyrate rarely, if ever, actively convey the contagion of scarlet fever. Against this opinion we may quote another nearer home. Principal Williams, who is well known to be an accurate observer, tells us that he was once called in to attend two favourite cats in a household in which several of

the family were suffering from scarlet fever. The symptomatology of the disease in the cats seemed to be analogous to that of scarlet fever in man, and he has no doubt that these animals suffered from scarlet fever. Of course if they can suffer from scarlet fever they can also transmit it to man, but we require more proof.

Glanders and Farcy.—While farcy is seldom a primary disease in the horse, it appears to be the usual form which attacks man, that is, an acute rather than a chronic specific blood-poisoning.

Infection takes place very readily, *e.g.* by inoculation of a cut or an abraded surface with the discharge from a diseased animal, or during dissection of, or operation on, such an animal.

It is important to note, however, that infection may take place without the presence of broken skin. If bacilli are mixed with lanoline and rubbed into the skin infection takes place. They are supposed to make their way into the hair-follicles, develop there, and gradually pass into the deeper layers of the skin and even to the lymph and blood streams.

Acute farcy is almost uniformly fatal in man.

Anthrax.—Anthrax, or splenic fever, was the first infectious disease whose causation and bacteriology were thoroughly worked out.

Davaine, as far back as 1850, described a rod-shaped organism in the blood of infected animals, and Koch was able to isolate it, grow it, and reproduce the disease by inoculation.

In 1846 it was first noticed that workmen who had to sort hides or fleeces, or who had to work in manure heaps from districts or countries in which splenic fever existed, were apt to manifest a peculiar skin disease, which often proved fatal. Rod-shaped organisms had been found in these pustules, and after Koch had clearly identified the character of the anthrax bacillus, this rod-shaped organism from the pustules was found to possess identical characters, so that the diseases in man and in the lower animals were the same, though manifesting themselves in different ways; the disease in some of the lower animals being a septicæmia or general blood-poisoning, the organisms growing in the blood; whereas in man it forms the localised "malignant pustule," in which the bacilli manufactures a

chemical poison or "toxin," and sends it into the blood-stream. Treatment in man depends on this peculiarity; excision of the pustule in an early stage curing the disease.

Plague.—This disease has long been recognised. It is also known as the "Black Death," and the most terrible visitation this country has experienced of it was in 1665. The recent epidemics began in Hong Kong in 1894, when Kitasato and Yersin discovered the causative organism independently.

In Bombay, during the epidemics which have prevailed since 1896, nearly 80 per cent. of deaths has occurred.

The disease occurs in India chiefly during the cold season lessening greatly towards the summer. This, as Surg.-Captain Davidson, of the Indian Medical Service, tells us, is explained by the habits of the lower classes of the people. During the warm season they sleep outside their dwellings, under comparatively healthy sanitary conditions, whereas during the winter they crowd into their houses in which sanitation is unknown, and lie packed together on the mud floor. Need it be wondered that the plague readily passes from one to another?

There are three endemic centres. The chief is Thibet, the others are Arabia and Central Africa, near to Uganda, from which it makes periodic excursions over the face of the earth. There are two varieties common on the Levant; the so-called Levantine, which does not tend to spread, and the Chinese, which is active and tends to spread.

The importance of this disease to us to-day lies in the fact that the bacillus can infect animals, such as mice, guinea-pigs, rabbits, and particularly grey monkeys and rats. In Formosa the name given to plague signifies a "disease of rats." In monkeys a prick with a pin dipped in a culture is sufficient to cause the disease, and this partly explains the ease with which man is attacked.

Neither rats nor man are infected by the alimentary canal; they are infected by the skin, or in a minority of cases by inhalation.

In man inoculation of the minutest scratch or cut with the contagion is sufficient, but in very many, probably the most of cases—according to Simond, who carried out these extremely hazardous experiments, the carrier of infection is found in the

flea—he found the bacillus of plague in the alimentary canal of large grey fleas which infested diseased rats ; such fleas when placed on dogs or man attacked them immediately. The diseased rat possesses the bacilli in its blood or tissue juice ; in these it passes to the flea, and then to man, attacking, as is to be expected, chiefly the lower extremities.

It reminds us of the old quotation—

> "And great fleas (animal pests) have little fleas
> Upon their backs to bite 'em,
> And little fleas have lesser fleas (bacteria),
> And so *ad infinitum*."

The disease attacks those who live in poor circumstances and in defective sanitary surroundings ; and from the Glasgow cases we have learned the disturbing fact that, all other circumstances being favourable, it may attack the white man as readily as the native of India.

In these cases, needless to say, it is unnecessary to call in the aid of rats as agents in the conveyance of infection ; once begun by direct contact, there were plenty of the secondary agents, if I may call them so, to convey the disease from one person to another, and to contaminate the houses as well, justifying the rigorous preventive measures adopted by the Glasgow sanitary and cleansing departments.

In the ordinary form, Bubonic Plague, the glands nearest to the point of infection enlarge, become markedly inflamed, red and tender. They only suppurate if other pyogenic organisms be present.

Foot and Mouth Disease.—This is a disease in which a vesicular eruption appears on the mucous membrane of the mouth and on the skin of the digits. It is very contagious amongst ruminant animals, both wild and domestic, and among pigs.

It is frequently transmitted to man—the contagion travelling in the saliva of animals, and the discharge from the ulcers.

There are numerous instances reported. The disease occurs in man on the hands or in the mouth, and is caused by direct infection with the discharge, or from drinking the milk of diseased animals. It may retain its virulence in butter made from such milk.

Lastly, and shortly, I shall touch on *Rabies or Hydrophobia.*

Man, along with all other warm-blooded animals, is susceptible to this disease. Though the poison appears to collect specially in the spinal cord, the organisms, whatever they are, seem to be present in the saliva. It cannot be wholly a chemical poison, because there is a regular incubation stage during which the poison develops in the body before symptoms of the disease manifest themselves. However, as rabies is now non-existent in Great Britain, we need not enlarge on it.

CLINICAL LECTURE
ON
CARDIAC FAILURE

By A. M. STALKER, M.A., M.D.,
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(*Continued from page* 86)

SENILE cardiac failure is associated with the vascular changes proper to old age. Old age, however, as you know, comes on for some people earlier, for others later than usual, and we have these vascular changes well-marked in some at forty-five years of age, while others remain free from them till over seventy. Again these changes, or at least changes broadly indistinguishable from them, can be induced in an individual not naturally prone to early senility. A life of continuous hard work, if associated with struggle and disappointment, alcoholic excess, and syphilis, are all of them singly, or, as frequently happens, in combination, fertile causes of early senile change. The most interesting form of all is that associated with disease of the kidney. In this the association may occur comparatively early in life, but it is equally well marked in old age. Dr Mahomed, to whom we owe some very careful studies of senile cardiac failure, was struck with the fact that, starting with no presuppositions regarding the connection between heart and kidney, he found almost invariably some chronic fibrous deposit in the kidneys even when the history during life threw no suspicion on the kidneys being affected. But before Mahomed, Gull and Sutton had worked out very carefully the connection in those cases in which the usual changes were

so extensive as to give the cases the character of renal more than of cardiac disease. They showed that the association of renal disease with cardiac hypertrophy and thickening of the vessels was so marked as to entitle the cases to a special name—arterio-capillary fibrosis. Partly from this clumsy title, partly from an intelligible desire to allow Bright's name to remain in association with all forms of chronic renal affection, and partly on account of various criticisms of the microscopic method used by these two very eminent men, their investigations met with scanty attention for several years. Their position was as follows. A certain type of chronic disease is marked clinically by high arterial tension, thickening of the arteries, hypertrophy of the heart, a varying amount of albuminuria, generally slight, sometimes none at all to begin with, ultimately evidences of cardiac failure with scanty urine, and death from uræmia. On investigation after death, the heart is found very large on account mainly of great thickening of the left ventricle, and the arterioles are found thickened throughout the body. The affection of the kidneys is found to consist in a great increase in the fibrous tissue, apparently originating in a perivascular fibrous deposit closely associated with new deposit in the vessels themselves. They put to themselves the question, is this a disease of the kidneys, or is it not rather a general vascular disease of the whole body? Coming to the latter conclusion they seriously handicapped their views, as I have said, by the adoption of the awkward periphrasis as a name—arterio-capillary fibrosis.

Now you will come across these cases in great numbers and in a very puzzling variety. The variety seems to arise from the differing degrees with which they affect the heart and kidneys respectively. A case will come before you complaining of headache with nausea, bad taste in the mouth, feelings of general discomfort, some shortness in the breath, a varying quantity of urine of low specific gravity, a pulse of high tension and a hypertrophied heart. There is no dropsy or it is very slight, but you at once class this as a case of cirrhotic disease of the kidneys. And so it is, in a manner of speaking. The danger to life arises from this interference with the function of the kidney, and within a week or two more serious symptoms supervene; the urine falls in quantity,

somnolence and ultimately uræmic unconsciousness come on, and the patient dies.

Another form in which you meet with this disease is when for a much longer period of time you have a patient under observation complaining of shortness of breath and inability for exertion. The urine is large in amount and contains no albumen, there is no dropsy, the pulse is of high tension and the heart hypertrophied. These patients may die suddenly after some exertion or during sleep, or may sink gradually with increasing difficulty of breathing, and at the last with scanty urine and unconsciousness, but the illness throughout is cardiac in type.

After death in these two forms the changes are found to be the same, the only difference being that the fibrosis of the kidney is less advanced in the latter case than in the former. In other words, each one of these cases presents in its clinical history the spectacle of a struggle between the heart and the kidney. If the heart fails before the structure of the kidney is so far affected as to destroy its function the case will be one of cardiac failure; while if the kidney is more seriously affected while yet the heart is fit for its work, the case will be one of renal failure and uræmia.

Putting now out of account the latter case, it is our task to inquire into the history of the cardiac failure. This history is very much the same in all its senile forms, not only those in which we can trace a close association with renal disease, but with the others I have mentioned due to muscular strain, privation and alcoholic indulgence. There is evidence in them all of a preceding rise of tension in the systemic arteries—indicated by an accentuation of the aortic second sound and by hardness of the pulse with a growing hypertrophy of the heart. These features are present long anterior to complaint on the part of the patient. Putting aside any presupposition as to degeneration in the cardiac muscle, it is reasonable enough to suppose that if the vascular strain continues and requires steadily increasing hypertrophy of the heart, a time will come when that must stop and the heart break down in its endeavour to go on answering to this. I do not say that you will not find evidences of myocardial degeneration after death in such cases. In those cases in which the patients

have lasted a long time after the heart first showed weakness you will probably do so in the shape mostly of increase of fibrous tissue. But the increase of fibrous tissue is not the cause of muscular exhaustion. Muscular exhaustion will set in when work requires to be done by a muscle that has worked through all its reserve of power and is required to do a bit more after that; the changes attending this are in the first instance purely molecular. If no long time has passed since the first indication of weakness of the heart, as, for example, when weakness of the heart and failure of the kidney set in almost simultaneously and a fatal issue speedily results, no degenerative change whatever is found in the cardiac muscle; but if the patient has been struggling on for some years with a failing heart, a considerable increase of fibrous tissue is the result. We cannot help attaching great importance to this structural alteration found after death, but it is of less significance as explaining the illness than as indicating what has passed during the illness.

Thus far we can go with considerable confidence. A vascular strain coming on in the decline of life, accelerated in some cases by unphysiological modes of living, calls for increased work on the part of the heart, which answers for a time and then gives way. Going back of this and inquiring into the nature of the strain, we come into a region of doubt and discussion. The condition marked as it is structurally by a thickening of the arteries throughout the body, with varying degrees of implication of the heart and kidneys, is the "arterio-capillary fibrosis" of Gull and Sutton. But the term "arterio-sclerosis" introduced mainly by Huchard has met with much more acceptance, and I really believe has substantially aided in making the recognition of the morbid process general in the last few years.

What is the cause of arterio-sclerosis? There are a great number of answers to this question, most of them answers which raise more difficulties than they help to solve. The explanation that commends itself in the meantime is that with the defective protoplasmic activity of advancing years, toxic elements which ought to be excreted remain in the circulation and exercise a stimulating and irritating influence both on the vessels and on the heart. How much of the cardiac

hypertrophy is due directly to this irritating influence and how much is due to the changes in the vessels, how far again the changes in the kidneys, interfering in a very gross and palpable way with the excretion of impurities, increase the strain upon the heart and vessels and lead to an intensification of the structural alterations—all these are questions for discussion and for the play of personal opinion, but the above explanation seems to arrange the facts in a more comprehensible order than any other at present.

There is one form of senile cardiac disease which you will meet with commonly enough—the so-called fatty heart. It is really doubtful whether such a disease exists. Fatty degeneration of the cardiac muscle takes place in the anæmias and in marasmus, but simultaneously with the lowering of the molecular life of the whole body, and we rarely if ever see the evidences of cardiac failure lend a particular stamp to these forms of disease. Fatty overlaying and infiltration of the heart muscle takes place in those who are very stout and where the weight for height is a third or even a half more than normal. The heart muscle is said to be compressed and weakened by the overlying layers of fat, and the work of the heart seriously affected in consequence. It is impossible to accept this explanation. A man of 5 feet 11 inches in height weighs naturally from 12 to 13 stone and carries this weight with ease. If he becomes the victim of obesity the working power of the heart will keep pace with his increased size for a considerable time in virtue largely of the reserve of power lodged in every healthy heart. But this man goes on getting more unmanageable in his bulk and at the age of sixty years of age weighs from 16 to 18 stone, has greater difficulty than before in going up hills or stairs, and recovers his power of going about after illness more slowly. It is the age at which the heart and vessels are tried in the ordinary course of things, and carrying four or five stone constantly in excess of the normal, adding to it, if anything, as the years go on, the natural and inevitable result is cardiac failure; a form of senile cardiac failure we may justly call it from the time of life and the associated conditions. In all this there is no tittle of evidence that the affection is due to the weakening of the cardiac muscle by the overlying mass of fat. It is the case of the heart breaking down before work for

which it is not fit, not from the weakening of the heart, but from the amount of work.

Before leaving this subject a word or two may be said as to other conditions associated with arterio-sclerosis which are sometimes of clinical interest, but not necessarily. Blockage of branches of the coronary artery through arterial degeneration leads to areas of necrosis throughout the cardiac muscle, sometimes few in number and small, sometimes many and extensive. The morbid appearances, yellowish or whitish yellow patches throughout the substance of the left ventricle and in the papillary muscles, are most striking, and it is difficult to believe that such an affection can exist without producing symptoms. But oftener than not it is discovered accidentally in those who have died of something other than cardiac disease altogether. Sometimes an irregularity of the heart lasting for years but not interfering with the circulation or with the capacity of the individual to do work, is discovered after death from something else to be associated with anæmic infarcts. It would be very difficult to prove that any form of myocardial degeneration indeed is a cause of cardiac failure, and there is probably no form of myocardial degeneration which admits of definition as a clinical disease.

There are various causes of cardiac failure which may operate at any time of life independently of valvular disease. Of these the most common are adherent pericardium when there has been pleurisy of the left side and extensive adhesions outside the pericardial sac, curvature of the spine and disease of the lungs. They are all fairly well marked and present no special difficulty in diagnosis or in explanation.

ON THE SURGICAL TREATMENT OF ANEURISMS BY EXCISION

By THOMAS ANNANDALE, F.R.C.S. Lond. and Edin.,
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THE successful treatment of various aneurisms by excision has of late years directed attention to this method, and it is now generally agreed that in suitable cases the procedure is the most certain means of obtaining a speedy and complete cure of the condition, and experience has further demon-

strated that the excision of aneurisms in such cases is on the whole attended with less risks than the other operative means. It must, however, be kept in view that other surgical procedures are successful in curing aneurisms, and it is in my opinion very important that the experience and results in connection with the *Excision* treatment should be carefully noted and recorded so that a comparison founded upon actual practice may be made between it and other methods still employed in order to determine which treatment is the safest and best.

We are not in a position as yet to assert that all aneurisms suitable for surgical interference should be treated in any one way; but what is to be determined is the form of surgical treatment likely to be the most satisfactory, and also to determine which is the best in individual aneurisms according to their condition and situation. It is certainly true that the antiseptic treatment of wounds and the use of the absorbent ligature have removed some of the risks of operations upon the blood-vessels; but in connection with the treatment of aneurisms, the principal risks removed by such treatment are those of sepsis of the wound and coats of the vessel where ligatured, with the consequent danger of secondary hæmorrhage. There still remains the risks of failure of the absorbent ligature to completely obliterate the canal of the vessel at the seat of its application, or of failure to cure the aneurism owing to the anastomosing circulation preventing complete coagulation of the blood in the sac.

The risk of gangrene and the inflammation and suppuration of the sac or its rupture cannot altogether be omitted in considering the ligature of the main artery of a limb in its continuity, even when the usual precautions have been taken. These remarks refer to the application of the ligature according to the "Hunterian" method, for the "distal" ligature is as a rule very unsatisfactory and is only employed in a few special cases. The treatment of aneurisms by compression, digital, instrumental, by flexion of the limb or by Reid's method, is not to be depended upon; and although any of them may bring about a satisfactory coagulation of the blood in the sac, and occasionally very

rapidly, they more frequently require to be continued for some time and with more or less pain and inconvenience to the patient.

Direct treatment upon an aneurismal sac by electrolysis or acu-puncture (including MacEwan's method) may in time result in a cure; but these methods require repeated applications which become irksome to the patient, and are in my opinion most suitable for cases in which no other treatment can safely be carried out.

When I first commenced the study of surgery there was a wholesome dread of interfering with the circulation of both the main artery and vein of a limb, and more especially in the case of the lower limbs; but it is now known from experience that both artery and vein may be obliterated without gangrene resulting, and more particularly if such obliteration is limited in extent and confined to the same point. The latter fact has an important bearing upon the treatment by excision as the vein as well as the artery at the affected point may require to be divided or portions of both removed. Cases of division of or removal of portions of both vein and artery which have from time to time occurred to me in my practice in operations upon arterio-venous aneurisms and in other conditions, have encouraged me to take a much more hopeful view of such cases than I did in the early days of my surgical work. One case specially occurs to me. It was that of an old gentleman of seventy who had a large sarcoma originating in the soft tissues of the thigh, in the neighbourhood of the femoral artery about its middle portion. I at first hesitated to interfere as the vessels were likely to be involved; but as the patient urged me to remove the growth, I exposed it by a free incision and dissected it out, but in doing so I was obliged to excise at least two inches of the femoral artery and vein which passed through the centre of the tumour. No gangrene resulted and the wound healed satisfactorily. The experience and records of other surgeons also confirm this opinion.

The treatment by excision is by no means a recent one, for Autyllus, many hundred years ago described the method by which the artery and aneurism were exposed, the vein separated from the artery, a ligature applied above and below the tumour, the sac then opened and as much as possible of it cut away without interfering with the ligatures.

Another principle in connection with the treatment under discussion which is worthy of notice is, that when ligaturing an artery in its continuity the complete division of the vessel, a ligature being applied above and below the seat of division, diminishes the risk of secondary hæmorrhage. I do not think I err in stating this as a recognised fact.

In recent literature a considerable number of successful cases of excision of aneurisms are recorded. Mr Stanley Boyd in the Encyclopedia Medica—one of the most recent of publications—enumerates thirty-five cases of "spontaneous" aneurisms treated by excision; of these 1 was carotid, 3 were subclavian, 7 were femoral, 22 were popliteal, 4 profunda, 1 posterio-tibial. The mortality in the thirty-five cases was only three, one being subclavian and the other two popliteal. Dr Curtis of New York has recorded some twenty cases of varicose aneurism treated by excision with only one death, and of these six affected the femoral artery. Since then several similar successful cases have been published by Dr Page of Newcastle in the *Lancet* for June 3, 1899, and by myself and others.

The successful operations of Moynihan, Allingham, Lediard, and others upon subclavian aneurisms, and of Walsham upon a carotid aneurism (*Lancet*, March 4, 1899), and the successful procedures of other surgeons, are a great encouragement for the adoption of the *Excision* method. Taking aneurisms of the subclavian artery as an illustration, it is well known how unsatisfactory their surgical treatment has proved, the mortality after operation being very serious; but I venture to think, even from the few reported cases, that their treatment by excision may prove more satisfactory. I recently had under my care, in the Royal Infirmary, a patient suffering from a comparatively limited aneurism of the third part of the right subclavian. As he was unwilling to undergo the major operation, I employed MacEwan's method, and carried out the treatment for two months. Some coagulation took place, but only to a limited extent, and the patient became restless and left the hospital. Should he return, my intention is to excise the aneurism, and, in order to prevent the risk of any serious hæmorrhage during the operation, I will carry out the temporary compression of the innominate by means of the finger, as described by me in the *Lancet* of March 13, 1886.

I have hopes that even certain aneurisms of the abdominal aorta may be treated by excision, such, for instance, as in a case similar to one reported by me in the "Edinburgh Hospital Reports," vol. vi.

As a further contribution to the practical experience of the *Excision* procedure, I give a note of my last case, treated on this principle.

U. J., æt. 37, was recommended to my colleague Mr Hodsdon by Dr Smyth of Amble for admission into my ward in the Royal Infirmary. Nine months before admission he felt a sudden pain in his popliteal space, which was followed by swelling of the leg and ankle. He was advised to rest for a few days, and the pain and swelling diminished. After this he returned to his work, but still suffered pain, and then a swelling was noticed in the popliteal space. Dr Smyth, recognising the nature of the case, advised him to come to the Infirmary for treatment, and he was therefore admitted upon the 24th of April of this year. When admitted there was a distinct aneurismal tumour in the popliteal space which pulsated strongly. The tumour was the size of a closed adult fist, and the leg, ankle, and foot were slightly œdematous. As the aneurism was limited I decided to excise it, and accordingly upon the 8th of May I exposed the tumour and vessel, and having applied a ligature to the artery on the cardiac aspect immediately above the sac, the latter was laid open and the clots turned out; the artery upon the distal side of the sac was found obliterated, and therefore did not require a ligature. The sac, together with a portion of the vein which was firmly adherent to it, was then dissected out. Upon the 5th of June the wound was entirely healed, and the general circulation of the leg and foot was thoroughly established. A few days after he returned home quite recovered.

Although I am quite aware that ligature of the femoral artery would in all probability have cured this case, I do not think that the cure would have been so rapid and so certain and complete if the "Hunterian" ligature had been employed. Nor am I as yet prepared to strongly advocate the excision method of treating popliteal aneurism in preference to the Hunterian ligature, but I do express the opinion that the former method has marked elements for careful consideration, taking into

account the success which has already attended its practice. To sum up, the *Excision* method has the following advantages :—

1. If the operation can be successfully performed the result is a *complete* cure of the aneurism.

2. The ligatures have the advantage of being applied to the *ends* of the divided vessels and not to them in their continuity.

3. Even if the corresponding vein be divided and a portion of it removed the risk of gangrene is not great.

4. That in this method all the advantages of the antiseptic treatment can be obtained in connection with the successful healing of the wound and closure of the vessels where divided.

5. Inflammation and suppuration of the sac or rupture of it cannot occur in connection with this method.

6. Although as yet more experience is required, it seems likely that certain aneurisms such as subclavian will in the future be treated more successfully by this method.

In conclusion I would remark upon the cases likely to be suitable for the *Excision* method.

I venture to express the opinion that in the near future the treatment of all aneurisms of the limbs, whether "spontaneous," "traumatic," or "arterio-venous," *provided they be tolerably circumscribed and free from complication*, will be most effectively carried out by *Excision* ; and that aneurisms of a diffuse nature, owing to rupture of the sac or from other causes, will be best treated by laying open the sac and ligaturing the vessel at its point of communication, either by an incision through the walls of the sac, according to the practice of the late Professor Syme, or by exposing and ligaturing the vessels immediately outside the sac. When possible it is no doubt advisable to excise the sac, or as much of it as can safely be dissected out ; but if the sac is much adherent to the surrounding tissues, it is best not to interfere with it but to be content with securing the communicating vessels. Having had considerable experience in leaving aneurismal sacs after opening them and securing the vessels, I can testify to the successful contraction and healing of their cavity without any risks.

The "fusiform" aneurism, owing to its pathological condition, cannot be considered favourable for surgical treatment ; but even in this form of aneurism when occurring in the limbs,

the excision of the dilated portion of the vessel would, I believe, be the best treatment, provided that it was not very extensive, rapidly increasing, and giving rise to aggravated symptoms.

There may, of course, be exceptional cases of sudden complications or conditions of health in which a less severe procedure than excision will be advisable, but I believe that these will not be frequent if the case is seen early and judicious treatment employed, and if serious complications, such as gangrene occur, immediate amputation must be resorted to. Although catgut and other absorbent ligatures are now frequently employed to secure divided arteries, or arteries in their continuity, I have from experience come to the opinion that a properly prepared silk ligature is the safest and best in securing important arteries.

CLINICAL LECTURE

ON UNDUE ADHESION OF THE MEMBRANES AS A COMPLICATION OF THE THIRD STAGE OF LABOUR [1]

By D. BERRY HART, M.D., F.R.C.P.Ed.,
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THE house surgeons have reported two cases of unduly adherent membranes in the third stage of labour, and I wish to-day to direct your attention to this complication, especially as opinions vary as to its importance and treatment. We consider it, therefore, as follows, now that you have heard the cases read.

1. The normal relations of the membranes and the mechanism of their normal separation during labour.
2. The causes of undue adhesion.
3. The varieties in extent of undue adhesion.
4. Its diagnosis; and finally,
5. Its treatment.

1. *The normal relations of the membranes and the mechanism of their normal separation during labour.*—The membranes line

[1] Delivered at the Royal Maternity and Simpson Memorial Hospital, Spring Quarter, 1900.

about four-fifths of the internal area of the uterus proper, *i.e.* the cavity between os internum and fundus. They consist of the amnion, chorion, and decidua vera, and are termed for shortness the deciduæ. The amnion and chorion form the fœtal membranes; the decidua vera is the maternal one. The decidua reflexa of the early months has practically atrophied, and does not concern us now. You will note that the amnion is the shining internal membrane, while the chorion and vera are rough and granular, with small areas of defect as if less elastic than the amnion. Note especially that the amnion does not cover the cord. You see as I strip it off the placenta it ceases to strip a little above the cord insertion into the placenta. At the os internum, of course, we have only amnion and chorion in the small area of the membranes covering it.

The membranes should be considered as in two portions, viz., part lining the lower uterine segment and the part above this: the former may be termed the prævial membranes.

One last anatomical fact. The decidua vera is the altered mucous membrane of the uterus, and has in it, near the uterine wall, little spaces. These form the spongy layer of the membranes, and this layer is continuous with the spongy layer in the placenta. Both are formed in the same way by the persistent fundi of the uterine glands.

During the first stage of labour the membranes become separated from the lower uterine segment. The lower uterine segment becomes converted from a hemispheroidal cup, as it were, into a cylinder. This necessitates great expansion at its lower part above the os internum, less as we pass up. This increase of area is not participated in by the membranes, and they tear off at the level of the spongy layer, *i.e.* become separated. The separation necessarily ceases at the retraction ring.

The rest of the membranes separate during the third stage of labour. They separate in part, not during a pain, but after it, when the elastic recoil of the muscle following a pain causes an increase of the internal uterine area, which, not being followed up perfectly by the membranes, leads to a tearing of the spongy layer. This mechanism is thus the same as in the separation of the prævial membranes. Small hæmorrhages help it, by dissecting off, as it were, the membranes, and probably a good

deal of separation of membranes takes place when the placenta is separated and driven down, *i.e.* by traction.

In a normal case we thus have the following sequence as to membrane-separation :—(1) separation of the prævial membranes in the first stage of labour; (2) rupture of the bag of waters; (3) separation of the membranes above the level of the retraction ring during the third stage of labour, with stripping off as the placenta is expelled.

You see in this specimen the placenta and membranes as expelled after a normal labour. Note the size of the membranes and the slit aperture you make by laying hold of the opening at two points. Look at this specimen carefully, so that you may know when the membranes are defective.

2. *The causes of undue adhesion.*—Of the exact conditions in undue adhesion we are unaware, as the specimens obtained have been separated. We know clinically, however, that undue adhesion is apt to occur in women who have had endometritis before conception, or who have had a previous labour with some endometric complication. It is possible that, as I have found in adherent placenta, the spongy layer is defectively developed, *i.e.* there are fewer or no spaces in the deep layer of the membranes; but of this we have no evidence as yet.

3. *The varieties and extent of undue adhesion.*—The prævial membranes may be adherent, and may hinder the canalisation of the lower uterine segment during the first stage of labour. Of this we know little that is exact, and I therefore pass on to the third stage adhesions. Practically, these may be partial in extent and in the lower uterine segment usually, or entire.

When partial and in the lower uterine segment, one notices that when the placenta is presenting at the vulva or protruding, it delays its exit. If the cleansed finger be passed, as I shall presently describe, it will be found that the membranes are tied above, as it were, the attached part passing through the retraction ring.

One sometimes has the membranes torn off in part at the placental edge. This occurs when there is a retained clot behind the placenta with, as it were, an ultimate burst through the membranes.

When the membranes are unduly adherent in their entirety, we get a perfectly definite clinical picture. The labour may

be slow, but the first thing that specially attracts the practitioner's attention is that during the third stage there is hæmorrhage—usually not much—but more than there should be. Then when the placenta separates, known by the lessening of the size of the uterus when palpated by the upper hand, the placenta does not descend to the vulva and pass out of it easily. Usually when the placenta is passing the vulva, resting on the attendant's hand, he can feel that it is not, or is hindered in its passage, *i.e.* is not or is detained by a membrane attachment. In the former case there is no adhesion, in the latter, the partial adhesion already described exists. In entire adhesion the placenta may present at the vulva, but gentle pressure does not make it pass. If the attendant is unwise and presses above unduly, the placenta may be forced out, but it is often minus the entire membranes. I have seen this happen in at least four instances.

5. *The dangers and treatment.*—The dangers of unduly adherent membranes are firstly, hæmorrhage during the third stage; and secondly, sepsis or threatened sepsis during the puerperium.

The hæmorrhage is due to the fact that the uterus cannot retract fully until the membranes and placenta are separated. It can retract less markedly than this but sufficiently to arrest hæmorrhage when the placenta and membranes are still normally adherent. It cannot retract sufficiently when the membranes are unduly adherent in their entirety.

If one diagnoses the total adhesion, the best thing is to treat the case as in adherent placenta. Douche the genital tract, pass the cleansed fingers into the vagina, where the placenta will be found lying; then with the placenta as a guide pass the hand higher, separate by sweeping the finger round, and extract placenta and membranes entire. Then douche out the uterine cavity through a double catheter with Lysol solution.

Should you be unfortunate enough to have the placenta expelled but the membranes retained, remove in the same way; but you will find it more difficult and you will be more cautious in another case.

When the membranes are adherent in the lower uterine segment you manage as follows:—Cleanse your hands, douche

the external parts and vagina; then making the patient lie on her back, you depress the uterus well with your upper hand and pass the fingers of the right hand along the anterior vaginal wall—the short route to the uterine cavity—and pressing the internal fingers on the band of membranes passing up, you easily strip it off. Douche the uterine cavity after this as before.

But some urge that when bits of membrane or even large pieces are left they come away in a few days, and if they set up any mischief this could be remedied by douching and drugs. They consider this less dangerous than the treatment I have recommended at the time. Your rule, however, should be to leave the genital tract free of macroscopic debris; any fairly big bit of membrane left, exposes the patient to sapræmia or sepsis. Remember that you can remedy quite successfully any retention of membranes at the time of labour, but by no means so easily afterwards in the puerperium. If sepsis arises you are or should be conscience-stricken as to the cause, and you will find your patient not so easy to treat. Put aside therefore this halting and dangerous counsel, remembering above all things that the time to remedy the mischief of adherent and retained membranes is at the labour and not in the puerperium.

SOME SIMPLE SURGICAL APPLIANCES

By CHARLES W. CATHCART, F.R.C.S.,
Senior Assistant Surgeon, Royal Infirmary, Edinburgh

Steriliser for Dressings.

BEFORE venturing to suggest a different pattern from Schimmelbusch's, which is the form of steriliser now almost exclusively employed in hospital and private practice, I think it worth while to discuss briefly the value of sterilisers in general, to see if they are likely to maintain their present position in popularity. About twenty years ago no sterilisers were heard of, and operations performed under the spray by Lister and his conscientious followers ran nearly if not quite as satisfactory a course as they do now. The spray has disappeared, and surgeons now think that the good which

it did might have been attained with less trouble in other ways, without certain attendant disadvantages. Is it likely that the same will be able to be said in a few years of the steriliser?

When the spray was employed, the whole region of the wound, including the surgeon's fingers, was bedewed throughout the operation with a 1-40 solution of carbolic acid. Although this no doubt entailed disadvantages from the chilling of the patient, and the irritation of the tissues, any micro-organisms gaining access to the wound during the operation must have been washed away or neutralised by the solution, while the surgeon and his assistants were obliged to breathe an antiseptic vapour, and were induced to keep their respiratory passages as far from the wound as possible. In the spray epoch, instruments, sponges, fingers and anything else likely to come in contact with the interior of the wound, as well as the patient's own skin, and the towels surrounding the operation area, were purified with 1-20 carbolic acid. Now, the wounds are douched with boiled water or salt solution, if at all, instruments are boiled, and the artificial sponges, gauze packings, and often all the dressings are sterilized by steam. Chemical antiseptics are still the only available means of purifying the skin of the surgeon's fingers and that of the patient round the wound, but since the spray was abandoned, there has been a tendency to increase the area of purification so as to affect the dress of the surgeon and the fittings of the theatre in many different ways which were not thought of before. For a time the swing of the pendulum kept in this direction, and many of the modifications introduced under the influence of this dominating idea will no doubt remain even although the pendulum swings back again, as it seems to have already begun to do. Recent investigations have shown that the problem of sterilizing the sweat glands, hair follicles, and deeper layers of epidermis is really the crucial one, and is indeed so difficult that no method has as yet been devised which can be relied upon in every case, at once to purify efficiently the hands and fingers, and to preserve the natural smoothness and suppleness of the skin. Solutions which some surgeon's hands can bear with impunity, cause the skin of others to crack and split and become as rough as files. If we remember therefore that the skin of our fingers and of the patient is the

most fertile source of danger because the most difficult of possible infection carriers to purify, we may now try to estimate the value of the steriliser. To begin with we must allow that it is not a necessity—whatever it does might be done in other ways, or done without, if certain important precautions be taken. It has, however, certain advantages; thus by its use cotton and woollen articles can be sterilized with less trouble than by boiling or soaking in antiseptics, and being dry or nearly so at the end of the process they are available for more purposes than they could be by any wet method. In the dry state they are besides more portable, which is important in private work. For these reasons a steriliser is calculated to facilitate antiseptic practice, and a

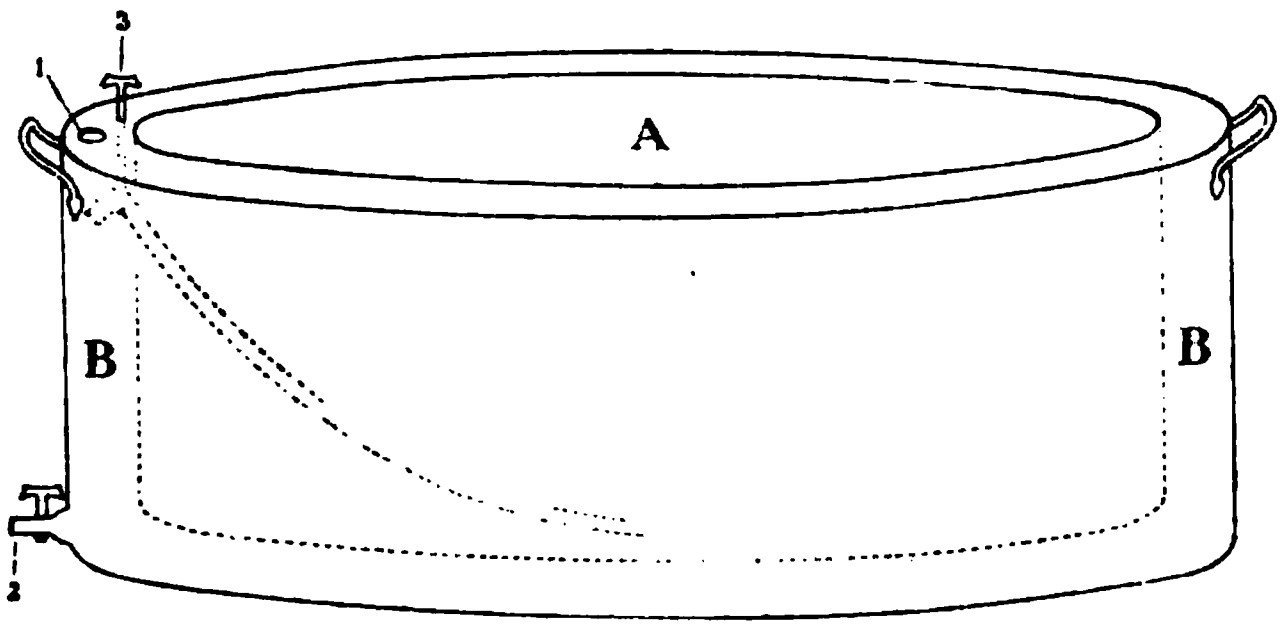

FIG. 1.

form of steriliser which while being equally efficient is less bulky and cheaper than those in common use in hospitals, seems likely to serve a useful purpose for private work.

The apparatus to which I refer was originally invented for sterilizing steel instruments by steam without rusting them,[1] but was shortly afterwards laid aside when the plan of boiling instruments in soda solution was introduced. Latterly, however, having dragged out my old friend from the obscurity of a dusty cupboard, I have found it very useful for dressings in the way I shall presently explain.

The apparatus consists of an oval tin pot (*a*) like a fish-kettle, measuring 16 inches long, by 9 wide at its broadest part, and 10 inches deep. It is surrounded, except where the

[1] *Edin. Med. Journal*, Aug. 1890.

lid fits on, by a larger vessel (*b*) of similar shape, an inch of space being left between them. In the outer chamber there are (1) the hole for filling in the water, or letting out the steam when so desired, a cork to plug the hole being chained beside it; (2) an exit tap for emptying out the water; (3) a stop-cock which, when turned on, opens steam communication between the upper part of the outer chamber and the lower part of the inner one half way along one side (the pipe which conducts the steam is shown by a dotted line in the diagram); and (4) a water gauge, not shown in the diagram. The lid fits firmly and closely into the top, but no attempt is made to make the junction steam-tight. In order to reduce as far as possible the condensation which is apt to occur on the under surface of the lid, it is made double with an air space of about $\frac{3}{4}$ of an inch between the layers, and over the top is spread a loose cover of non-conducting material.

The size of the apparatus permits of its being placed on any kitchen range, the steam escaping by the chimney; but if desired it can be heated by a gas or paraffin flame. When heating the contents of the inner chamber (before and after sterilization) the cork is left out of the filling hole (1) and the stop-cock (3) is closed. When steam is to be introduced the stop-cock is opened and the filling hole plugged with the cork. Should by mischance the stop-cock be closed while the hole is also plugged there will be no exit for the steam in the outer chamber, but the cork will be blown out before the pressure gets very high. It was to provide a simple safety valve of this kind that I used a cork rather than a screwing top to close the filling hole, which is also made funnel-shaped to prevent the cork from holding too firmly. In order to hasten the drying of the contents of the steriliser after the steam has been shut off, I find it advisable to loosen the lid and slightly raise it at one end.

A "kettle" or dressing box could be adapted to this form of steriliser, but I have not found one necessary. When used to prepare dressings in a private hospital, or in the patient's house, the steriliser itself can be used as a "kettle," with the advantage of keeping everything hot if the hot water be allowed to remain in the outer chamber. For ordinary private work, however, I adopt another method. Instead of sterilizing for each operation the articles required for it, I sterilize what

might be called dressing or operation "units," and keep them ready, wrapped in packets. These units can be put together in any proportion at a moment's notice for any particular operation. Thus sets of artificial sponges of various kinds, for big or small operations, nail-brushes in pairs, balls or lengths of gauze, operation cloths, aprons, and so on, are laid in the steriliser, each on a piece of "grease-proof" kitchen paper large enough to wrap it up in securely, everything being of course kept open and free to allow of the circulation of the steam. After sterilization the contents are dried for thirty or forty minutes, and then with surgically purified hands the parcels are wrapped up, and the contents indicated on each with ink. The packages, if laid away in a drawer with a clean cloth over them, seem to me quite safe against contamination because, although the packages are not sealed, the passage from the inside to the outside is a narrow and sinuous one which has been shown to be as proof against organisms as a plug of cotton wool. A more theoretically perfect receptacle, however, for the storage of these packages would be large confectionary jars closed against dust by the method to be presently described.

By adopting this plan the surgeon not only avoids the trouble of frequent sterilization, but is able to start for an operation at any moment—night or day—with the sterilized articles that he may require for any particular case.

The efficiency of this form of steriliser has been tested by means of the small registering thermometers recommended by Professor Max Schüller in the *Centralblatt f. Chirurgie*, No. 3, 1900, for the purpose. The thermometer, placed in the centre of the thickest layers of the pieces of dressing that I include in any one parcel, had reached the boiling point in twenty minutes after the steam had been turned on. I have not yet had time to see how much earlier the same point is reached.

Mr Gilchrist, 22 Nicolson Street, Edinburgh, makes these sterilisers. The price of each is 30s. inclusive of cover.

Substitute for Glass Instrument Cases.

With the object of preserving surgical instruments from dust, it is now the fashion to keep them in cases made entirely of glass and iron, and furnished with doors

which fit air-tight. These cases look very well, and are no doubt easily cleaned, but they are very expensive, and do not seem to me to repay their cost. In the first place an absolute freedom from dust is not of so much importance when the instruments are to be sterilized in any case by boiling, scalding, or soaking in 1-20 carbolic lotion just before the operation. In the second place, the value of air-tight fittings is neutralised by the fact that every time the case is opened, and left open as it often must be while some of the instruments are being taken out, the remainder of the contents are exposed to the dust of the room.

Nevertheless, as no one likes to see their instrument covered with dust, I would recommend another method which is both cheaper and more efficient. This consists in keeping groups of instruments in separate glass jars. Confectionary jars are the best for the purpose, because they have no neck or constriction at the top, and being largely used for their own purpose, are sold very cheaply. The lid fits loosely, and by pasting a layer of cotton wool along the part where it comes against the rim, we can ensure that the junction is practically dust-proof (fig. 2). A ground glass stopper, while not more efficient as a preventative against dust, is much more expensive, and not so readily taken out and put in.

FIG. 2.

A number of jars, of various sizes, having been cleaned and provided with the cotton wool fitting, can be sterilized and dried in the steriliser just described, if so desired, although rinsing with 1-20 carbolic and drying before the fire seems to me sufficient. In these jars the instruments are placed in

sets, those required for a similar purpose being kept by themselves, as far as the size will allow. Thus in one jar we may keep artery forceps ; in another, bone instruments ; in another, tracheotomy tubes ; and so on.

Such a system does not entail exposing to dust more than a few instruments instead of the whole collection when one or two are being removed for use, and makes any ordinary cupboard, or even shelf, as satisfactory as a glass and iron case. The cost of one of these special cases is about £30 for a medium size, while about 30s. or 40s. would be sufficient for an ample supply of confectionary jars.

On the advantage of rolling Gauze Dressings in Balls.

In a short paper, published in this journal in July 1897, I advocated the method of rolling catgut in balls to take the place of spools or other form of apparatus. The method has continued to give satisfaction, and latterly I have found it very convenient when applied to gauze dressings. The winding process is exactly similar for a thread of catgut (fig. 3), or a strand of folded gauze, only the diameter of the rod is larger in the latter case, and the mode of finishing off is simpler. When making a roll of, say cyanide, gauze into a ball, the folded thickness, which is about six inches across, runs into a sort of loose cord as it passes through the hand in the winding, without requiring to be folded any smaller. If it were required to fold a six yard piece of muslin, the following method would be adopted. Two persons would stretch out

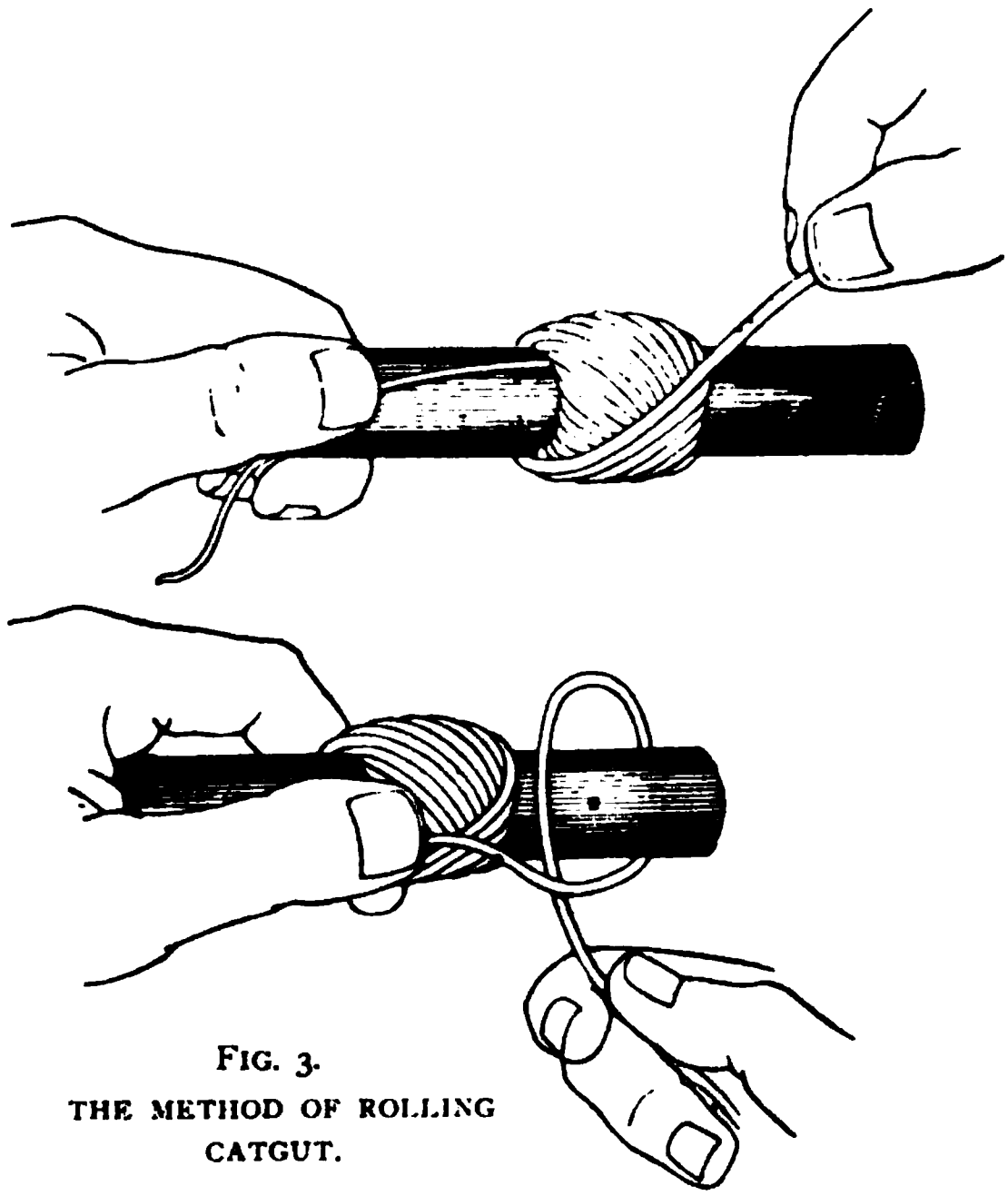

FIG. 3.
THE METHOD OF ROLLING CATGUT.

the muslin between them to its full extent. Then, each bringing his hands together, they would fold the muslin across its breadth. This would be repeated twice so as to bring the full length of gauze into one-eighth of its original breadth. It is then ready to be wound on a rod, and it gathers itself as before-mentioned into a loose cord as it passes through the hand. A glass tube of about three-quarters of an inch serves the purpose of a rod; a full-sized glass drainage tube does very well. The end of the gauze is fastened by being tucked under the last turn, and the ball thus finished is drawn off the rod, sterilized, and wrapped up for future use. When iodoform, bicyanide, or other previously prepared gauze is being used for dressing a case, the ball should be packed into a surgically clean jar, the central end being surrounded with cotton wool (fig. 4). The gauze can be drawn out and cut off with scissors as required, while the remainder lies secure under the wool. By using a glass vessel one can see when the ball is running down, otherwise a pasteboard or other form of opaque box would do as well. A stoppered vessel is preferable for iodoform gauze. Messrs J. F. MacFarlan & Co. will supply any of their prepared gauze dressings in ball form when requested to do so, and have procured at my suggestion admirable transparent celluloid boxes, price 1s. each, in which to keep the balls when in use.

FIG. 4.

JAW JERK AND JAW CLONUS

By ALEXANDER JAMES, M.D., F.R.C.P.Ed.,
Physician to the Royal Infirmary

I HAVE lately had the opportunity to investigate the reaction time of the jaw jerk as compared with the knee and ankle jerks in the same individuals, and also to time a jaw clonus. The results of this I propose to give in this paper.

As regards the jerks, the method followed was to connect two recording tambours—the first with a receiving tambour, the button of which was held in contact with the part moved —jaw, leg, or foot; the second with a tube having a flexible extremity which could be held on the jaw or tendon, and through which those parts could be tapped and the jerk induced. A chronograph vibrating 100 per sec. enabled the interval between the tap and the movement to be ascertained.

I. The first case was a woman, C. A., æt. 36, who was admitted into the Royal Infirmary, Aug. 10, 1900. She had what appears to have been a slight myelitis after influenza ten years ago. This had kept her in bed for several weeks, at the end of which time she began to move about a little, and she has, she states, remained in much the same condition ever since. There is no history of syphilis. At present she has impaired sensations over the lower half of the trunk and legs, impaired voluntary motor power in the legs and back, occasional bladder trouble, increased knee and ankle jerks and clonus, no nystagmus, but marked jaw jerk. In this case the times were—ankle ·07 sec., knee ·05 sec., jaw ·02 sec.

II. The second case was Mrs L., æt. 37, who was admitted to Ward 33, Jan. 12, 1900. She was suffering from a form of myelitis very similar to the former case, but of only eighteen months' duration. She had also similar sensory motor and bladder troubles, no nystagmus, but marked ankle, knee, and jaw jerks. In her case the times were—ankle ·07 sec., knee ·06 sec., jaw ·03 sec.

The next two cases were patients in the Longmore Hospital, and for permission to investigate these I have to thank Drs Affleck, Lundie and Blaikie.

III. Mr X., æt. 40, suffering from a form of sclerosis of cord and brain of uncertain distribution, had shown for several

years all these increased jerks in a marked degree. In his case the ankle was ·065 sec., the knee ·05 sec., and the jaw ·02 sec.

IV. Mrs Y., æt. 40, suffering from amyotrophic lateral sclerosis of many years' duration, showed the jaw and knee jerks markedly, but the ankle jerk only indifferently. I therefore timed only the knee and jaw jerks, finding the former ·05 sec. and the latter ·02.

For the opportunity of examining the next case, I am indebted to Dr Lovell Gulland.

V. J. P., æt. 41, a plumber, was seen Aug. 19, 1900. He was suffering from a form of lateral sclerosis, and had been ill for four and a half years. All the jerks were markedly increased, and in him I found the ankle ·055 sec., the knee ·04 sec., and the jaw ·02 sec.

These various measurements agree in the main with what has been previously stated,[1] and looking specially at the difference in the reaction times of the different jerks in the same individual, they quite bear out the view that the time of these muscle or tendon jerks varies directly with the distance between the muscles concerned and their nerve centres in the cord or medulla.

In previous papers[2] I also pointed out that the phenomena of clonus supported this view. True clonus may be regarded as "a series of jerks, each jerk acting as a stimulus to the one

TRACING OF JAW CLONUS.

[1] For a résumé on this subject, see Sherrington, "Tremor, Tendon-phenomena, and Spasm" in Allbutt's "System of Medicine," vol. vi, p. 523.

[2] Clonus and Tendon reflex phenomena. *Edinburgh Medical Journal*, August 1880, and Laboratory Report of the Royal College of Physicians, Edinburgh, 1890.

which follows." Hence the rapidity of a clonus varies inversely with the distance between the muscle or muscles concerned in its production and their centres in the cord or medulla.

We find, therefore, that although differences due to individual conditions may occur, the ankle clonus is slower than the knee, the knee than the hip, etc. We should thus expect that the jaw clonus would be very rapid, indeed perhaps, the most rapid of all. This is precisely what it seems to be.

VI. Miss I. D., æt. 28, was admitted to Ward 33 Royal Infirmary, June 1st, 1900, affected with marked neuræsthenia, slight enlargement of the thyroid gland, feeble and rapid action of the heart and fine tremors of the hands. She had also continuous clonus of the jaw causing often a chattering of the teeth as if in an ague paroxysm. This, which had begun about a week before her admission, lasted for two weeks after. During that time it would go on for hours, ceasing however when she spoke and when she slept. When it was restrained, as by forcibly pressing the inferior maxilla upwards or downwards, or by bending the head over and on to the chest, a peculiarly irritating cough was set up so that the restraint had to be removed.

By means of a tambour and chronograph vibrating once per second, I found (see tracing) its rate to be about 12 per second. This is practically the same as the head clonus which can be induced by most people, and quite bears out the view previously expressed as regards the conditions which seem to govern the rate of clonus in different muscles.

A CASE OF PERFORATED GASTRIC ULCER WITH RECOVERY AFTER SUTURE

By JOHN SHAW M'LAREN, M.A., F.R.C.S.Ed.,

Assistant Surgeon, Royal Infirmary, Edinburgh; Lecturer on Surgery, School of the Royal Colleges, Edinburgh

THE record of successful cases of suture for perforated gastric ulcer is now a considerable one, but it is not yet long enough to rob a fresh report of all interest. The disease is so common, the accident in it so far from infrequent and so dangerous, and

the desire of statisticians for material still so keen, that one is justified in adding a fresh report to the mass of information collecting on the subject. I append the notes of a case I operated on two years ago.

C. F., aged 20, a domestic servant, was admitted to the Royal Infirmary, Edinburgh, early on the morning of the 11th of August 1898, complaining of intense abdominal pain.

History.—For some years the woman had suffered from symptoms of gastric ulcer; she had twice been treated in hospital for it, the last occasion being but a few months previous to this attack. She had suffered, too, from anæmia in the usual way. A few hours before admission, at midnight, while in bed, she was seized suddenly with a violent pain in the abdomen, accompanied by nausea, but not by vomiting. Dr Thyne was called to the patient at once, and immediately sent her to hospital with a diagnosis of perforated gastric ulcer.

State on Admission.—The patient lay on her back, with the knees drawn up; face pale and anxious. Temperature 100·4°; pulse 104, small, wirey. She could not be described as suffering from profound shock; in fact I was somewhat struck by the absence of it. Her mouth was dry, and she complained of intense thirst. There was no vomiting. The abdomen did not move in respiration, which was entirely costal. The abdominal walls were hard and board-like. Percussion revealed nothing abnormal, no sign of fluid or of gas in the peritoneal cavity. Great pain was complained of, referred to the umbilicus. There was general tenderness over the abdomen, but it was by far most marked over the region of the stomach. I used the point of one finger in testing the tenderness on pressure, and although the left hypochondrium was tender as a whole, one spot was distinguished by intense pain. I passed my finger in various directions, but ever as it lit on this one spot, it elicited the greatest protest. Curious to see if it would lead to the perforation, I marked the spot with an aniline pencil; it lay a little to the left of a point midway between the umbilicus and the tip of the sternum. (See operation.) As might have been expected in a servant girl with her history, the patient showed signs of considerable anæmia.

Operation.—At 6 A.M.—six hours after the onset of the pain—I opened the abdomen by a median incision above

the umbilicus. I passed my finger in the direction of the pencil mark on the skin, and exactly underneath it I found the ulcer at once—a small hard disc in the anterior stomach wall, near the lesser curvature. In the centre of this was a perforation with a valve-like covering which flapped up and down. The perforation would have admitted a small lead pencil. The opening was plugged by a shred of gauze, and the ulcer invaginated by a row of Lembert sutures, the plug being gradually withdrawn. A second row of sutures was added. There did not seem to be extensive soiling of the peritoneum, but there was sufficient to lead me to wash the stomach and intestines for some time with hot salt water. The wound was stitched up, room being left for a drainage-tube.

Progress.—On the first two days she suffered some pain, and morphia was given. After that there was an entire absence of pain. On the second day the temperature was 101°; subsequently normal. She was fed at first by the rectum; on the second day she was allowed to swallow some peptonized milk. The tube was removed on the fifth day. A year after the operation she was in very good health.

Finney, of Baltimore, read a valuable paper on this subject before the American Surgical Association this year—at least it is a convenient summary of our knowledge up to the present. I might further condense, and see how this case tallies.

Frequency of Occurrence of Perforation.—From 6 to 18 per cent. of all gastric ulcers will perforate, according to various statistics. It is said to vary much in different countries. It takes place *relatively* more frequently in men, but *actually* five times more frequently in women.

The Site of Perforation.—"According to Pariser and Lindner, of 200 cases of gastric ulcer, 190 will be on the posterior wall, and 10 on the anterior wall; of the 190, 4 will perforate; of the 10, 8½ will perforate." "Both ulcer and perforation occur more frequently upon the lesser than upon the greater curvature." This case was upon the anterior wall, and near the lesser curvature.

Number of Perforations.—In 20 per cent. of cases there are more than one perforation—an important fact to bear in mind. In this case there was but one.

Symptoms.—There is no sign which indicates an impending perforation. When it occurs, the chief symptom is sudden and overwhelming pain in the upper part of the abdomen. Vomiting, pronounced shock, localized tenderness, signs of peritonitis, and signs of gas or fluid in the peritoneum are the other symptoms. In this case vomiting was absent, as were also all signs of gas or fluid in the peritoneum. Shock was really *not* marked, at least when I saw the patient. But the sudden pain was intense, the abdominal rigidity of peritonitis was marked, while the localised tenderness was—if I may use the expression—quite exquisitely defined, as I have pointed out.

Diagnosis.—History of dyspepsia or gastric ulcer is present in 92 per cent. of all cases. Appendicitis or intestinal obstruction seem to be the most important conditions which might lead to error.

Treatment.—Of course entirely surgical. And what an advance has been made in the last twenty years! Operation should be undertaken at once; infiltration anæsthesia is to be preferred to the use of chloroform or ether; the incision should be made in the middle line; the ulcer should not be excised, but simply tucked in wholesale with first one, and then a second, row of sutures. It is amazing to find in recent works on surgery, and works of a high class too, that excision is spoken of as if it were the only proceeding to be considered, and invagination is never so much as mentioned! If the stiffness or friability of the wall makes suturing impossible, one can drain with gauze or tube, or make artificial adhesions (Finney). I might add when such measures are impracticable or would consume a dangerous amount of time, the stomach might be rapidly stitched to the wound and packed. The detail and extent of washing out the peritoneum with saline solution will depend on the amount of soiling and peritonitis. The solution should be very hot. Rectal feeding should be the rule for a day or two.

Prognosis.—To what extent is the peritoneum damaged both as regards amount of surface injured and the intensity of the poison? Perhaps after all, as Richardson has indicated, the size of the perforation has much to do with it, a large opening causing "a sudden overwhelming of the abdominal cavity rather than a spreading invasion"; but the time elapsing

between perforation and operation comes very closely second in importance. In this case the perforation was of moderate size; the interval six hours.

MEDICAL EDUCATION IN SCOTLAND

The Universities

FOUR degrees are conferred by the Universities, viz., Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.) and Doctor of Medicine and Master of Surgery (M.D. and Ch.M.). The degrees of M.B. and Ch.B. must, however, be taken together and at the same time. The higher degrees of M.D. and Ch.M. are conferred separately.

PRELIMINARY EXAMINATION.—This must be passed before the medical course is entered upon. The subjects of examination are:—

(1) *English.*—Two general questions are put dealing with any period of British History. Two questions are asked in geography and four in grammar, which includes correction of sentences, parsing, analysis, and derivation. The candidate is required to write an essay and do a paraphrase, while two questions of a literary and general kind are asked. Eight questions must be answered, and these must include one in history and one in geography, the essay and the paraphrase.

(2) *Latin.*—Translation, Parsing, Grammar, Composition, and Sentences.

(3) *Elementary Mathematics.*—This includes (*a*) Arithmetic—vulgar and decimal fractions, proportion, percentage, square root, simple interest. (*b*) Algebra—fractions, factors, square root, equations of the first degree, simultaneous equations of the first degree, easy quadratic equations and problems leading to these. (*c*) Geometry, Euclid (Books I. II. and III.), or their equivalents, with easy deductions.

(4) *Greek, or French or German.*

Greek.—Translations, sentences, grammar.

French or German.—Grammar, translations from English and from French or German, sentences of idiomatic character, literary or historical questions.

All these subjects must be passed at two examinations. Exemption from this preliminary examination, wholly or in part, is afforded by the candidate having obtained the Leaving Certificates of the Education Department or by the possession of an Arts or Science degree of any University. Other examinations passed by the candidate and exempting him from

the medical preliminary examination are fully detailed in the University Calendars.

Dates of Examination.—Two examinations are held yearly; in October and April.

The fee for examination is half a guinea.

REGISTRATION BY THE GENERAL MEDICAL COUNCIL.—Every medical student must register within fifteen days of commencing medical study, *i.e.* he must have his name entered on the official Register of Medical Students kept by the Council. (Mr James Robertson, 48 George Square, Edinburgh.)

No other examination than the preliminary is necessary before registration.

MATRICULATION.—Students become members of the University by entering their names in the Matriculation Album.

Every student must sign the Matriculation Album each year and pay the matriculation fee, as also the fees of the classes he proposes to join, within fifteen days from the beginning of the session. (For admission at a later date an additional fee of 5s. is payable.)

The matriculation fee for the whole year is £1, 1s., and for the summer session alone, 10s. 6d.

Edinburgh University Professional Education

The following is a brief summary of the order in which the classes should be attended. If the student begins in the summer—

First Summer.— Elementary Botany and Physics.
The examination in those should be taken in July as part of the First Professional Examination.

First Winter.— Chemistry, theoretical and practical.
Elementary Zoology.
Lectures on Anatomy.
The examination in Chemistry and Zoology should be taken in March as the remainder of the First Professional.

Second Summer.—Practical Anatomy and Practical Physiology.*

Second Winter.— Lectures on Physiology * and Surgery.
Practical Anatomy.

* In addition to the five months' systematic course on Physiology, the following courses on Practical Physiology are given. Winter Session: (1) *Practical Experimental Physiology*—Every week-day except Saturday, from the middle of October to the end of January; 10 A.M. to 12 noon. Fee, £2, 2s. Each student to attend on one day in the week only. (2) *Practical Chemical Physiology*—Every week-day except Saturday, from the middle of October to the end of January; 10 to 11 A.M. Fee, £1, 1s. Each student to attend on one day in the week only. Summer Session: *Practical Histology*—Each student to attend for two hours on four days a week from beginning of May. Fee, £2, 2s.

Third Summer.— Practical Anatomy and Practical Materia Medica.
Clinical Surgery and Surgical Ward Work.
Third Winter.— Practical Anatomy.
Lectures on Materia Medica.
Clinical Surgery and Ward Work.
The examination in Anatomy and Physiology should be taken in March.
Fourth Summer.—Lectures on Medical Jurisprudence and Public Health.
Practical Pathology. *Post-Mortem* Examinations.
Clinical Medicine and Dispensary Work.
The examination in Materia Medica may be taken in July.
Fourth Winter.— Lectures on Pathology, Medicine, Midwifery and Diseases of Women.
Clinical Medicine and Ward Work.
The examination in Pathology and Medical Jurisprudence should be taken in March.
Fifth Summer and Winter.—
Clinical Medicine and Surgery.
Mental Diseases, Ophthalmology, Diseases of Children, Ear and Throat, and Skin.
Fever Hospital, Midwifery Cases, and Dispensary.
Vaccination, Operative Surgery.
The final examination is to be taken in April, May, and June.

The course of instruction in Clinical Medicine and Clinical Surgery must each have extended over a period of not less than nine months, and attendance at the Infirmary or hospital must be for not less than three years.

The candidate must have attended twelve cases of Midwifery under the superintendence of a qualified practitioner. If, however, he has attended for three months the practice of a Maternity Hospital six cases will be deemed sufficient.

In order to obtain a University degree two of the five years of medical study must have been passed at the University of Edinburgh, or, of the compulsory subjects of study, not less than eight must have been taken in the University.

Women students may obtain the University degrees, but are not taught in any of the University classes. The Medical College for Women, Minto House, is the college recognised by the University for the education of women who intend to graduate at the University.

Professional Examinations for M.B. and Ch.B.

The candidate is examined both in writing and orally and practically where possible.

First Examination.—Botany, Zoology, Physics, Chemistry.

Second Examination.—Anatomy, Physiology, Materia Medica and Therapeutics.

Third Examination.—Pathology, Medical Jurisprudence, and Public Health.

Fourth Examination.—Medicine and Clinical Medicine, Surgery and Clinical Surgery, Midwifery, and Diseases of Women and Children.

If the candidate fails in one or more subjects of each examination it does not disqualify him from passing in the other subjects of that examination. No candidate can obtain these degrees until he has obtained the age of twenty-one years.

The total expense incurred in paying class fees and examination fees for the degrees of M.B. and Ch.B. amounts to from £130 to £150.

Degree of M.D.

This degree is conferred on those who already possess the M.B. and Ch.B. degrees. The candidate must be at least twenty-four years of age, and must have been engaged in general practice for two years. If, however, he has been engaged in the medical wards of an infirmary, or in scientific research, or in the military or naval services, then one year is deemed sufficient. He must pass an examination in Clinical Medicine or in some of its special departments, and must present a thesis written by himself and dealing with a medical subject.

Degree of Ch.M.

Candidates must have attained the age of twenty-four years, and must have worked for one year in the surgical wards of an hospital or alternatively as above described. He must pass an examination on surgical anatomy, operations on the dead body, clinical surgery and its special branches. He must also submit a thesis dealing with a surgical subject.

Fees for the Professional Examinations

For the first, second, and final examinations six guineas each; four guineas for the third; while ten guineas is the fee for each of the higher degrees of M.D. and Ch.M. For re-examination the fee is one guinea for each subject.

DEGREES IN PUBLIC HEALTH

Two degrees are granted by the University of Edinburgh in the department of Sanitary Science, viz., B.Sc. and D.Sc.

Bachelor of Science

Candidates must be graduates in Medicine of a University of the United Kingdom or of some other recognised University. In order to obtain the degree two examinations have to be passed.

First Examination.—Before entering for this examination, the candidate must, after graduating in Medicine, have worked in a recognised Public Health Laboratory for eight months, of which five consecutive months must be passed in the Public Health Laboratory of the University of Edinburgh.

He must also have attended in a Scottish University a course of lectures on Physics and a course of lectures on Geology, extending over three months, and both of which are approved of by the University Court.

The subjects of examination are as follows:—

(1) *Laboratory* work—Practical, written and oral: examination of water, air, foods, beverages, condiments, sewage; soils; disinfectants; building materials; clothing; bacteriology.
(2) Physics. (3) Geology.

Second Examination.—This cannot be taken until eighteen months after graduating in medicine; nor sooner than six months after passing the First B.Sc. Examination. The candidate must have attended two separate courses in Public Health, either in the University of Edinburgh or in some other recognised University or School.

Each course must consist of forty lectures, and include Medicine in its relation to Public Health and Sanitary Engineering.

The candidate must likewise produce evidence that (1) for six months he has studied sanitary work under a Medical Officer of Health for a county or borough of not less than 25,000 inhabitants; (2) that he has studied clinically for three months infectious diseases in a recognised institution; (3) that for three months he has been instructed by a recognised teacher in mensuration and drawing.

The subjects of examination are:—

(1) Sanitation; (2) Sanitary Law; (3) Vital Statistics; (4) Medicine in relation to Public Health.

The candidate is examined orally, practically, and by a written paper. *Sanitation* includes making reports on dwellings, workshops, hospitals, and sanitary schemes.

The University Court may modify the work and instruction prescribed from time to time.

Doctor of Science

A graduate after having held the degree of B.Sc. for five years may present himself for the D.Sc. He must present a thesis, the result of his own research, or a published work or memoirs, and must pass an examination in Public Health, and in such of its special subjects as the Senatus may determine. The candidate must submit the subject in which he proposes to be examined for approval not less than two months before the examination.

Fees Payable.—First and second examinations, £3, 3s. each; for D.Sc., £10, 10s.

Qualifications given by the Scottish Colleges

The "triple qualification," as it is termed (L.R.C.P.E., L.R.C.S.E., L.F.P.S., Glasgow) is granted by the three Corporations, the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, by means of conjoint examinations. Female students are admitted to the examinations on the same footing as male students.

Preliminary Examination.—This is much the same as is required by the University of Edinburgh. The Educational Institute of Scotland conducts a qualifying Preliminary examination for medical students on behalf of the Colleges. Particulars of this examination may be obtained from David Ross, LL.D., Established Church Training College, Glasgow; or from Alexander Mackay, LL.D., 40 Princes Street, Edinburgh. The whole of the examination must be passed at one time in order to obtain a certificate. Various other certificates of having passed certain examinations are recognised as exempting from this examination, and these are enumerated in the regulations of the Colleges.

Registration.—After passing the preliminary examination the student should at once enter his name on the register of medical students kept by Mr James Robertson, 48 George Square, Edinburgh.

Professional Examination.—The curriculum must extend over five years. Graduates in Arts or Science of any recognised University who have spent a year in the study of Physics, Chemistry and Biology, and have passed an examination in these subjects for the degrees in question, are exempted from the first year of study.

It is advisable to devote the fifth year to clinical work in any recognised Public Hospital or Dispensary, and to the study of special diseases. In lieu of this, however, six months of the final year may be passed by the student as a pupil to a registered practitioner.

ORDER OF STUDY WHICH IS RECOMMENDED

First Summer.— Three months' course in Physics and Elementary Biology.

First Winter.— Six months' course in Chemistry; three months' course in Practical Chemistry.

Second Summer.—Histology—Three months' course.
Practical Anatomy.

Second Winter.— Lectures on Anatomy—Six months' course.
Lectures on Physiology—Six months' course.
Practical Anatomy—Twelve months.

Third Summer.—Pathology, Materia Medica, and Practical Materia Medica—Three months' course in each.

Third Winter.— Six months' course in Surgery and Clinical Surgery. Attendance at Hospital.

Fourth Summer.—Three months' course in Midwifery and Gynæcology.
Medical Jurisprudence and Public Health.
Clinical Surgery. Attendance at Hospital.

Fourth Winter.— Lectures on Medicine and Clinical Medicine —Six months' course in each

Fifth Summer.— Three months at Clinical Medicine.
Practical Midwifery—Personal attendance on twenty cases under the direction of a medical practitioner, *or*, alternatively, three months' attendance at a Lying-in-institution and personal attendance on six cases.
Insanity, Diseases of Children, Diseases of the Eye.

Fifth Winter.— Fevers, Operative Surgery, Vaccination, Dispensary Practice, Skin Diseases, Ear and Throat. Hospital.

PROFESSIONAL EXAMINATIONS.—Four of these are held during the curriculum. Each is held quarterly in Edinburgh and bi-annually in Glasgow. Candidates may go up for all the subjects of the first Professional examination at once, or may enter for and pass in any division of subjects. A higher percentage of marks is required, however, from candidates entering for such divisions.

Candidates must enter for *all* the subjects of the second, third, and final examinations.

First Examination.— This embraces Physics, Chemistry, and Elementary Biology. It may be taken wholly or in divisions, and should be passed before the beginning of the second winter session.

Second Examination.—Anatomy, Physiology, including Histology. This should be passed at the end of the second year of study.

Third Examination.—Pathology, Materia Medica, and Pharmacy. This should be taken at the end of the third year.

Final Examination.—Can only be taken at the end of the fifth year. The candidate must have attained the age of twenty-one.

It includes—

1. Medicine, Therapeutics, Medical Anatomy, Clinical Medicine.
2. Surgery, Surgical Anatomy, Clinical Surgery, Diseases of the Eye.
3. Midwifery and Diseases of Women and Newly-born Children.
4. Medical Jurisprudence and Public Health.

Fees for Professional Examinations

For the first three, £5 each. For the final, £15. The total expenses for the licences amount to from £110 to £120.

Diploma in Public Health of the Royal Colleges

This Diploma is granted by the Triple Qualification Board after one series of examinations.

1. Every candidate must have held a registrable medical qualification for one year before appearing for this examination.

2. After graduation in Medicine he must have attended during six months a Public Health Laboratory recognised by the Board, and in which Chemistry, Bacteriology, and the Pathology of the Diseases of Animals transmissible to man are taught.

3. He must have studied practically after obtaining his medical qualification, during six months, outdoor sanitary work under a recognised teacher.

(*a*) In England and Wales a Medical Officer of Health of a county with not less than 50,000 population.

(*b*) In Scotland or Ireland the Medical Officer of a county or combination with not less than 30,000 inhabitants.

(*c*) Under a Medical Officer of Health who is a teacher in the Department of Public Health in a recognised medical school.

If the candidate have been a Medical Officer of Health himself he is exempted from this regulation.

4. He must have studied fevers clinically in a recognised hospital.

The First Examination includes—

(1) Laboratory work—very much the same as for the University of Edinburgh.

(2) Chemistry. (3) Physics. (4) Meteorology.

Second Examination embraces—

(1) Report on premises visited.
(2) Examination at Fever Hospital.
(3) Examination at Public Abattoir.
(4) Epidemiology and Endemiology.
(5) Vital Statistics and Sanitary Law.
(6) Practical Sanitation.

The Examinations are held twice yearly, in October and May. Fee for each, £5, 5s. Re-examination £3, 3s.

Apply to Mr JAS. ROBERTSON, 48 George Square, Edinburgh, or to Mr ALEXANDER DUNCAN, LL.D., 242 St Vincent Street, Glasgow.

MEMBERSHIP AND FELLOWSHIP OF THE ROYAL COLLEGE OF PHYSICIANS

The candidate must hold a recognised qualification, and be of the age of twenty-five years. He must pass an examination on Medicine and Therapeutics and on Clinical Medicine, and on some special branch of medicine—*e.g.* Psychological Medicine, Pathology, Medical Jurisprudence, Public Health, Midwifery, Gynæcology, Neurology, &c.

The fee for the Membership is £31, 10s.; but if the candidate hold the Licence of the College it is £15, 15s.

The Fellowship is conferred by election on Members of not less than three years' standing—the fee being £56, 10s.

FELLOWSHIP OF THE ROYAL COLLEGE OF SURGEONS

Every candidate for the Fellowship must be twenty-five years of age, and must have been engaged in the practice of his profession for two years after obtaining a recognised qualification in Surgery. He must pass an examination on the Principles

and Practice of Surgery, Surgical Anatomy, Operative and Clinical Surgery, and one optional subject—*e.g.* Ophthalmology, Aural and Laryngeal Surgery: Cerebro-Spinal, Abdominal, Gynæcological, Orthopædic, Dental, Venereal and Genito-Urinary Surgery: Advanced Anatomy or Physiology, Surgical Pathology and Morbid Anatomy, Midwifery, Medical Jurisprudence and Public Health.

The petition for examination must be signed by two Fellows as proposer and seconder. The payments to the College funds amount to £45. If the candidate be a Licentiate of the College, the payment is only £30.

Institutions for Clinical Instruction in Edinburgh

Royal Infirmary. Over 700 beds. Fees—perpetual ticket, £12; or one year, £6, 6s.; six months, £4, 4s.; three months, £2, 2s. Clinical instruction is given daily in all the branches of Medicine and Surgery by many teachers.

Royal Hospital for Sick Children. 84 beds. 700 in-patients yearly.

Royal Maternity and Simpson Memorial Hospital. 300 in-patients yearly.

City Hospital for Infectious Diseases. 400 beds.

Royal Asylum, Morningside. 500 beds.

Many Dispensaries for General and Special Diseases.

Medical Education for Women in Edinburgh

Medical College for Women, Minto House, Chambers Street

This College is conducted by the Scottish Association for the Medical Education of Women—an Association which has for its object the furthering of the medical education of women on a liberal basis.

The curriculum is the same as that provided for male students in the Extra-mural School, and is recognised by the University of Edinburgh as qualifying for graduation in medicine and Surgery, as well as by the other Universities and Colleges open to women.

Fees are the same as for male students, varying to some extent according as the student works for a University degree or a College qualification. Students are required to pay a College matriculation fee of 25s. for the winter session, and 15s. for the summer session.

The prospectus for the Medical College for Women, as well as any information regarding the medical education of women

in Edinburgh, can be obtained from Miss Mackie, Secretary, Medical College for Women, Minto House, Chambers Street, Edinburgh, who will also be glad to furnish lists of lodgings to intending students.

Clinical tuition is provided in the Edinburgh Royal Infirmary for women students.

List of Teachers in Edinburgh

From the following list of teachers, the student may select those whom he considers to be the most desirable instructors. The courses given by the Extra-Mural Lecturers are recognised as qualifying for graduation by the University of Edinburgh and by other examining Boards.

Anatomy— Professor Sir Wm. Turner, M.B., F.R.S., University.
R. J. A. Berry, M.D., New School.
J. Ryland Whitaker, M.B., Surgeons' Hall.

Botany— Professor I. Balfour, M.D., Botanical Gardens.
A. N. MacAlpine, B.Sc., Minto School.
Robert Turnbull, B.Sc., New School.

Chemistry— Professor Crum Brown, M.D., University.
Stevenson Macadam, Ph.D., Surgeons' Hall.
W. Ivison Macadam, F.R.S.E., Surgeons' Hall.
A. P. Aitken, D.Sc., Royal Veterinary College.
Dr Readman, 4 Lindsay Place (Practical and Analytical).

Practical Chemistry (*alone*)—
J. Falconer King, F.C.S., Minto House.
J. B. Readman, D.Sc., 4 Lindsay Place.

Zoology— Professor Ewart, M.D., University.

Biology— R. Turnbull, New School.

Physics— Professor P. G. Tait, M.A., University.
C. G. Knott, D.Sc., University.
Dawson Turner, M.D., Surgeons' Hall.

Physiology— Professor Schäfer, M.D., University.
D. Noel Paton, M.D., Surgeons' Hall.

Pathology— Professor Greenfield, M.D., University.
W. Russell, M.D., Medical College for Women.
Theodore Shennan, M.D., Surgeons' Hall.

Materia Medica and Therapeutics—
Professor T. R. Fraser, M.D., University.
William Craig, M.D., Surgeons' Hall.
Lockhart Gillespie, M.D., Minto House.

Medical Jurisprudence and Public Health—
Professor Sir Henry Littlejohn, M.D., University.
Harvey Littlejohn, M.D., Surgeons' Hall.
Aitchison Robertson, M.D., New School.

Surgery— Professor J. Chiene, M.D., University.
F. M. Caird, F.R.C.S.E., New School.
J. W. B. Hodsdon, F.R.C.S.E., Surgeons' Hall.
J. Shaw M'Laren, F.R.C.S.E., New School.
H. Alexis Thomson, F.R.C.S.E., Minto House.
David Wallace, F.R.C.S.E., Nicolson Square.
A. Miles, F.R.C.S.Ed., Med. Col. for Women.

Clinical Surgery—
Professor Annandale, F.R.C.S.E., Royal Infirmary.
P. H. Maclaren, F.R.C.S.E., „
C. W. Macgillivray, F.R.C.S.E., „
J. M. Cotterill, F.R.C.S.E., „
C. W. Cathcart, F.R.C.S., „

Practice of Physic—
Professor Wyllie, M.D., University.
Alex. James, M.D., New School.
J. O. Affleck, M.D., Surgeons' Hall.
Byrom Bramwell, M.D., New School.
G. A. Gibson, M.D., Minto House.
R. W. Philip, M.D., New School.
R. A. Fleming, M.D., 27 Nicolson Square.
Graham Brown, M.D.

Clinical Medicine—
The Physicians of the Royal Infirmary.

Midwifery and Diseases of Women—
Professor A. R. Simpson, M.D., University.
J. Halliday Croom, M.D., Minto House.
D. Berry Hart, M.D., Surgeons' Hall.
J. W. Ballantyne, M.D., Medical School for Women.
A. H. F. Barbour, M.D., New School.
R. Milne Murray, M.D., New School.
F. W. N. Haultain, M.D., New School.
J. Haig Ferguson, M.D., New School.

Insanity— T. S. Clouston, M.D., University and Royal Asylum.
Sir J. Batty Tuke, M.D., } Surgeons' Hall and
G. M. Robertson, M.B., } Stirling District Asylum.

Diseases of the Eye—
G. A. Berry, M.B., University.
G. Mackay, M.D., Surgeons' Hall.
W. G. Sym, M.D., New School.

Vaccination—Wm. Husband, M.D., Royal Public Dispensary, Richmond Street.
J. B. Buist, M.D., Western and Cowgate Dispensary.
Francis Cadell, F.R.C.S.E., New Town Dispensary, Thistle Street.

Diseases of Children—
The Physicians and Surgeons of the Sick Children's Hospital.
John Thomson, M.D., New School, Bristo Street.

Diseases of the Skin—
W. Allan Jamieson, M.D., Royal Infirmary.
Stewart Stirling, M.D., Surgeons' Hall.
Norman Walker, M.D., Royal Infirmary.

Diseases of the Ear, Nose, and Throat—
P. M'Bride, M.D., Royal Infirmary.
G. Hunter Mackenzie, M.D., Eye, Ear, and Throat Infirmary.

Systematic Gynæcology—
N. T. Brewis, M.D., 27 Nicolson Square.

Bacteriology—J. Taylor Grant, M.D., 4 Lindsay Place.

Glasgow University

The medical curriculum at the University extends over five years, and the classes are held in the handsome buildings at Gilmorehill, adjacent to which lies the Western Infirmary, where there is an excellent field for clinical and practical work.

The Faculty of Medicine embraces the classes of Botany, Zoology, Physics, Chemistry, Anatomy, Embryology, Physiology, Materia Medica and Therapeutics, Pathology, Medical Jurisprudence and Public Health, Surgery, Clinical Surgery, Practice of Medicine, Clinical Medicine, Midwifery, Insanity, Diseases of the Eye, Diseases of the Ear, Diseases of the Throat and Nose, Diseases of the Skin, and Diseases of Children.

The cost of the medical curriculum is about £126.

Before the commencement of medical and surgical studies the preliminary examination has to be passed. The names of candidates for this examination must be given in and the fee of 10s. 6d. paid to the assistant clerk at the Matriculation Office. At the Matriculation Office successful students can obtain the registration forms which must be filled up and sent to 48 George Square, Edinburgh.

The University of Glasgow offers many attractions to students. The professional chairs are occupied by able men, some of them of world-wide renown; and in the Western Infirmary with the recent additions to its surgical theatres, and its excellent pathological laboratories and museum, a splendid field of observation is open to the student. There are also extremely good opportunities for practical work in the various dispensaries of the city, in the Maternity Hospital with its large out-door department, and also at the Royal Hospital for Sick Children, the Eye Infirmary, and the Royal Asylum of Gartnavel.

The Students' Union, situated in the University grounds, is very convenient, and much taken advantage of, while the football and cricket field, the gymnasium and tennis-courts lie just below, between the University and the Western Infirmary.

Lodgings are to be found all round the neighbourhood, so that the whole life of the student, his work and his recreation, is drawn into a small circle, within which he can move as busily and as profitably to himself as in any teaching school in the kingdom.

A students' magazine is usually issued weekly during the session, and has a successful circulation amongst all the students at Gilmorehill. For medical students there is a Medico-Chirurgical Society for debating purposes.

Queen Margaret College for Women

In February 1892 the Universities' Commission issued an ordinance empowering the Scottish University Courts to make provision, within the Universities, for instruction of women. The Council of Queen Margaret College, in consideration of this provision, made over their work to the University. The "Queen Margaret College" survives now as the part of the University which is devoted to the education of women.

A full course of medicine and surgery is obtainable. The regulations, fees, etc., are similar to those for men. The buildings are pleasantly situated in grounds of their own, close to the Botanic Gardens. The newly-built anatomical department is excellently arranged and most complete. Clinical work is amply provided for in the Royal Infirmary and its Dispensaries, and in the Royal Hospital for Sick Children, the Glasgow Maternity Hospital, the Royal Asylum of Gartnavel, and the Belvidere Fever Hospital. There are also arrangements for special study and research.

Students can have board and lodging at Queen Margaret

Hall, within easy reach of the College, at the rate of about one guinea per week for each week of the session. The school is flourishing and largely attended. There is a winter session commencing in October and a summer session in April.

All information necessary can be obtained from Miss Galloway, Queen Margaret College, Glasgow.

St Mungo's College Medical School, Glasgow

St Mungo's College was the outcome of the Royal Infirmary Medical School which was opened in 1876. The venerable Infirmary has now actively existed for one hundred and four years, and the students of St Mungo have peculiarly good opportunities for practical and clinical work in the wards and dispensaries. To the Royal Infirmary a large number of accidents are admitted, and numerous medical cases of all kinds; and for students, and more especially for house-surgeons and house-physicians, the practical experience is abundant. St Mungo's College buildings are attached to the Dispensary and adjacent to the Infirmary. The winter session opens in October, and there is always a summer session from April to July. All information regarding classes, fees, etc., can be obtained from the Dean, St Mungo's College, 86 Castle Street. The classes are for male students only. The class-rooms and laboratories have accommodation for 300 or 400 students. The anatomical department consists of large, well-lighted dissecting-rooms, a lecture-room, and osteology gallery and museum. There are also chemical, physiological, zoological, and botanical laboratories. In the adjacent dispensaries fully 40,000 patients are seen yearly. Students can also have access to the well-equipped Pathological Museum and Laboratory of the Infirmary and the bacteriological department.

The electrical department of the hospital is one of the best in the country.

The bursaries are few in number, but the class fees are moderate, averaging two guineas for a winter course, while the combined theoretical and practical courses of anatomy, zoology, physiology and pathology are four guineas each.

A Public Health Laboratory is also open to students for a complete course in practical work, and there are two lectureships on this subject, so that those who desire may conform to the new regulations of the Medical Council and the requirements of the examining boards. Excellent instruction in fevers can be obtained at the Belvidere Hospital. Dressers and clerks

are chosen from the students for work in the wards of the Infirmary.

Anderson's College Medical School,

Dumbarton Road, Partick, Glasgow

Lectures are delivered on all the subjects of the five years' curriculum; hospital practice and clinical lectures in Western or Royal Infirmary, pathology in Western or Royal Infirmary, vaccination and dispensary practice in Western or Royal Infirmary Dispensary. The above lectures qualify for all the Licensing Boards in the United Kingdom.

They are also recognised by the Universities of London, Durham, Ireland, Glasgow and Edinburgh (the latter two under certain conditions, which are stated in the school calendar).

The new buildings are situated in Dumbarton Road, immediately to the west of the entrance to the Western Infirmary, within two minutes' walk of that institution and four minutes' walk of the University.

A calendar containing full particulars of the school may be obtained from the secretary to the Medical Faculty, Anderson's College Medical School, Dumbarton Road, Partick, Glasgow.

The session opens on Thursday, 18th October.

Class fees (anatomy, chemistry, practical materia medica and pharmacy, practical physiology, zoology, botany, and mental diseases excepted): First session, £2, 2s.; second session, £1, 1s.; afterwards free.

Anatomy class fees: Winter, first session (including practical anatomy), £4, 4s.; second session (including practical anatomy), £4, 4s.; third session, £2, 2s. To those who have had the necessary courses of practical anatomy the fee will be £1, 1s.

Summer—Lectures and practical anatomy, £2, 12s. 6d.; lectures alone, £1, 11s. 6d.; practical anatomy alone, £1, 1s.; osteology and practical anatomy, £2, 12s. 6d.; osteology alone, £1, 11s. 6d.

Chemistry class fees: Winter, first course, £2, 2s.; second course, £2, 2s. Summer (practical), first course, £2, 2s.; second course, £2, 2s.

Practical materia medica and pharmacy class fees: First session, £2, 2s.; second session, £2, 2s.

Practical physiology class fees: First session, £2, 2s.; second session, £2, 2s.

Zoology, £1, 11s. 6d.; practical zoology, £1, 1s.

Botany: Reduced joint fee for lectures and practical class when taken in same summer, £3, 3s.; for either course separately, £2, 2s.

Mental diseases, £1, 1s.

Matriculation fee: Winter, 10s. to those taking out two or more classes, which represents a combined fee for the winter and summer sessions; 5s. to those taking only one class.

Summer, 5s., except to those who have paid a fee of 10s. for the winter session.

Students who have attended classes at other schools, and who desire to pursue their studies at Anderson's College Medical School, will be admitted to such classes as they may have attended elsewhere at the reduced fees.

Aberdeen University

The course of study for the degree of M.B., Ch.B., extends over five years, of which two at least must be spent in the University of Aberdeen.

The curriculum is the same as in the other Scottish Universities as far as relates to attendance on University classes, to clinical study at a General Hospital, to attendance on courses of Clinical Surgery, Clinical Medicine, Mental Diseases, and Practical Pharmacy, to instruction in Vaccination, and to attendance on Cases of Labour.

Certificates for these various classes and courses must attest not only regular attendance, but also due performance of the work.

There is no prescribed order of study, but a scheme, representing the minimum curriculum, has been drawn up for the guidance of students, and is printed in the Calendar.

The following are the Classes in the Medical Faculty:—

WINTER SESSION.

Zoology—Professor John Arthur Thomson, M.A.
Chemistry—Professor Japp, M.A., LL.D., F.R.S.
Anatomy—Professor Reid, M.D., F.R.C.S.
Practical Anatomy—Professor Reid and Assistants.
Physiology (*Syst. and Pract.*)—Professor MacWilliam, M.D.
Materia Medica—Professor Cash, M.D., F.R.S.
Pathology (*Syst. and Pract.*) — Professor Hamilton, M.B., F.R.C.S.E., F.R.S.E.
Surgery—Professor Ogston, C.M., M.D.
Medicine—Professor Findlay, B.A., M.D., F.R.C.P.
Midwifery and Diseases of Women and Children—Professor Stephenson, M.D., F.R.C.S.E.

SUMMER SESSION.

Botany—Professor Trail, M.A., M.D., F.L.S., F.R.S.
Practical Botany—Professor Trail.
Zoology—Professor Thomson.
Practical Zoology—Professor Thomson.
Physics—Professor Niven, M.A., D.Sc., F.R.S.
Practical Chemistry—Professor Japp and Assistant.
Practical Anatomy—Professor Reid and Assistants.
Practical Materia Medica and Therapeutic—Professor Cash and Assistant.
Physiology (*Syst. and Pract.*)—Professor MacWilliam.
Forensic Medicine—Professor Hay, M.D.
Practical Hygiene and Forensic Medicine—Professor Hay.
Pathology (*Syst. and Pract.*)—Professor Hamilton.
Practical Midwifery and Gynecology and Clinical Diseases of Children—Professor Stephenson.
Tropical Medicine—Dr G. A. Maconachie, Lecturer.

Systematic and Practical Pathology, and Systematic and Practical Physiology respectively are now taught as parts of one continuous course, occupying a whole academic year—*i.e.* a summer and a winter session.

There are Assistants to the Professors in the Medical Faculty appointed annually, two in the departments of Anatomy and Chemistry, and one in each of the other departments.

The following are recognised as Lecturers :—

Lecturer on	Mental Diseases.	Wm. Reid, M.D.
,,	Ophthalmology	C. H. Usher, M.B., B.C., F.R.C.S.E.
,,	Vaccination	R. G. M'Kerron, M.A., M.D.
,,	Skin Diseases	R. J. Garden, M.D., C.M.
,,	Diseases of Ear, Throat, and Nose	J. Mackenzie Booth, M.D., C.M.
,,	Dental Surgery	W. H. Williamson, M.D., D.D.S.
,,	Ophthalmology	A. Rudolph Galloway, M.A., M.B., C.M.

All the University Classes are held at Marischal College.

Tutorial Classes are held in connection with most of the Systematic Courses, and practical instruction is given in the fully-equipped Laboratories connected with the several departments.

Graduates or others desirous of engaging in special study or research may be allowed by the Senatus to work in any of

the Laboratories. Such Research Students are exempted from payment of Laboratory Fees (*v. infra*), but must matriculate each year, paying the ordinary Matriculation Fee.

Fees for Ordinary Laboratory Course—

For six hours a week (winter session) .	£3	3	0
Each additional hour („ „) .	0	10	6
For nine hours a week (summer „) .	3	3	0
Each additional hour	0	7	0
Or, For one month (all day)	4	4	0
„ two months („) . . .	7	7	0
„ three „ („) . . .	10	10	0

The Matriculation Fee must be paid in addition.

General clinical instruction is obtained in the following Medical Institutions :—

The Royal Infirmary of Aberdeen

This General Hospital, situated about seven minutes' walk from Marischal College, has been recently constructed on the most modern principles, and is fully equipped with all the requirements for medical work and teaching. It accommodates upwards of two hundred patients; the number of patients admitted during the year 1899 was 2516, and the number of out-patients treated during the same period was 6625.

Four resident medical officers are appointed annually, two in May and two in August, from those who have completed their medical course, to hold office for twelve months. Salary, £25 with board.

Fees.—Perpetual fee to hospital practice, £6, or, first year, £3, 10s., second year, £3, afterwards free ; clerkship in medicine, £1, 1s.; dressership in surgery, £1, 1s.; pathological demonstrations, £1, 1s. (Special courses of lectures are charged for.)

Royal Hospital for Sick Children

It is situated about five minutes' walk from Marischal College.

It accommodates over 80 patients, having recently undergone extension. The number of patients admitted in 1899 was 755, and the number of out-patients treated, 1081. No infectious disease except diphtheria is treated.

Each student must act as clerk for six weeks in the medical and surgical wards respectively.

There is one qualified house physician and surgeon (resident) who holds office for six months. Salary at the rate of £50 per annum.

Fee for hospital practice, £2, 2s.

Royal Asylum

It is situated about fifteen minutes' walk from Marischal College. It accommodates over 800 patients, and has been recently fitted up with a fully equipped hospital and a laboratory.

The senior physician is recognised by the University as lecturer on mental diseases, and delivers a qualifying course of lectures.

The City (Fever) Hospital

It is situated about ten minutes' walk from Marischal College, and accommodates 100 patients.

Senior students are admitted for instruction in fevers twice a week under the visiting physician (who is the Medical Officer of Health for the City) and his assistant. Fee, £1, 1s.

There is one qualified resident house physician, appointed annually. Salary, £50 and board.

General Dispensary, Lying-in, and Vaccine Institution

It is situated about two minutes' walk from Marischal College.

The total number of cases treated during 1899 was 12,161, and the number of patients treated at their own homes, 3491.

Fees.—Perpetual fee, £3, 3s.; vaccination certificate and instruction, £1, 1s.; for special courses, *v. supra.*

Ophthalmic Institution

This institution is situated about three minutes' walk from Marischal College. The surgeon in charge is recognised by the University as a lecturer on ophthalmology.

During 1899, 65 in-patients and 3230 out-patients were treated.

PROFESSIONAL EXAMINATIONS

I. Degrees of M.B., Ch.B.

There are four examinations: the subjects and regulations of these are common to all the Scottish Universities.

II. Degree of M.D.

The regulations are common to all the Scottish Universities.

The candidate must be M.B., Ch.B. of Aberdeen University, and twenty-four years of age or upwards.

He must submit a thesis composed by himself, and pass an examination in clinical medicine.

The following are special regulations with regard to the clinical examination :—

The examination is both written and oral, and consists of the following divisions—

Part I. (*a*) A written report on one or more clinical cases examined by the candidate.

(*b*) An oral and practical examination at the bedside.

Candidates must be able to use the laryngoscope and ophthalmoscope, so far as they are required in medical cases.

Part II. The candidate must show a high proficiency in a special department selected by himself, *e.g.* Obstetrics, Mental Diseases, Zymotic Diseases, or other departments approved by the Senatus.

Part III. A commentary in writing on a case or cases, a statement of the particulars of which will be submitted to the candidate.

(For dates of submission of thesis, payment, offices, etc., *v.* degree of C.M.)

III. Degree of C.M.

The regulations are common to all the Scottish Universities.

The candidate must be M.B., Ch.B. of Aberdeen University, and twenty-four years of age or upwards.

He must submit a thesis composed by himself, and pass an examination, of which the following are the special regulations :—

The examination is written, oral, and practical, and consists of the following divisions—

Part I. (*a*) A written report on one or more clinical cases examined by the candidate.

(*b*) An oral and practical examination on cases.

Candidates must be familiar with the use of instruments required in investigating diseases of the eye, ear, and throat.

Part II. An examination in surgical anatomy and operations on the cadaver.

Each candidate for the degree of C.M. or of M.D. must lodge his thesis (accompanied by a signed declaration that the work has been done and the thesis composed by himself) with the Dean of the Faculty of Medicine not later than 1st February for the spring graduation of 1st June for the summer graduation. He shall at the same time intimate

the special department of clinical examination (M.D.) for which he wishes to enter, and pay the necessary fee.

The fee for the degree of M.D. or C.M. is £10, 10s. (exclusive of any stamp duty); re-examination fee is £2, 2s.

IV. Diploma in Public Health (D.P.H.)

The diploma is conferred, after special instruction and examination, on anyone who has been at least twelve months a graduate in medicine of a university in the United Kingdom; if not a graduate of Aberdeen University, the candidate must attend a course of instruction in this University in one or more subjects embraced in the examination for the diploma.

Each candidate must have attended a course of instruction in Public Health.

The qualifying post-graduate instruction embraces—

(α) Regular attendance, for six months, at a general fever hospital with not less than fifty beds.

(β) Daily study for six months of the duties of outdoor sanitary work under a Medical Officer of Health. (Any candidate who has himself been a Medical Officer of Health is exempt from this.)

(γ) Practical instruction, for at least six months, in laboratory work, which includes examination of water, air, soil and foods, and the study of bacteriology, disinfection, ventilation, water supply and sewerage, and the framing of reports of analysis.. The laboratory attendance must extend over at least fifteen hours a week.

The qualifying courses of laboratory instruction in Aberdeen University are given in the Public Health Laboratory (Fee, £6, 6s.), and the Bacteriological Laboratory (Fee, £3, 3s.).

The Diploma is conferred after an examination in March and July of each year.

The examination is written, oral and practical, and is divided into two parts.

Part I. embraces the following subjects in their application to Public Health.

(α) Physics, Engineering, and Meteorology.

(β) Chemistry, Microscopy, and Bacteriology.

Part II. embraces :—

(α) General Hygiene.

(β) Sanitary Law and Vital Statistics.

Part I. may be taken alone, or both parts together.

The written examinations occupy two days, and the oral and laboratory and outdoor examination three to four days.

Candidates must send in their names, together with certificates of requisite instruction and fee, to the Secretary of Faculties, a fortnight before the examination. Examination fee is five guineas. Re-examination fee one guinea.

SUMMARY OF FEES

I. University Fees

(*a*) Preliminary Examination (each occasion) .	£0	10	6
(*β*) Matriculation—For whole year . .	1	1	0
For Summer Session .	0	10	6
(*γ*) Class Fees.—Each Systematic Course—First attendance .	3	3	0
„ —Each subsequent attendance .	2	2	0
Each Practical and Operative Course . . .	3	3	0
Except { Practical Botany .	2	2	0
and Practical Zoology .	2	2	0

(*δ*) Degree Fees—For M.B., Ch.B.—

1st Professional Exam.	£5	5	0	
2nd „ „	5	5	0	
3rd „ „	5	5	0	
4th „ „	7	7	0	
				£23 2 0
Re-examination fee for not more than two subjects				1 1 0
„ for each additional subject .				0 10 6
For M.D.				10 10 0
For Ch.M.				10 10 0
Re-examination Fee				2 2 0

II. Non-University Fees

Royal Infirmary—Perpetual Fee . .	£6	0	0
Children's Hospital	2	2	0
Dispensary—Perpetual Fee . . .	3	3	0
City (Fever) Hospital	1	1	0
Lectures on clinical medicine—Winter Session .	3	3	0
Summer „ .	2	2	0
„ clinical surgery— „ „ .	2	2	0
Clerkship at Royal Infirmary . . .	1	1	0
Dressership „ „ . . .	1	1	0

Course of lectures on { Tropical Medicine; Diseases of eye; „ ear, throat and nose; „ skin; Mental diseases; } Each £1, 1s.

Instruction in { Vaccination; Dentistry; *Post-mortem* room; } Each £1, 1s.

The cost of matriculation, class, and hospital fees for the whole curriculum, exclusive of fees for degrees, is usually about £100.

University of St Andrews

The medical degrees are the same as those of the other Scottish universities, and they are granted under similar conditions. The graduation fees for the degree of M.B., Ch.B. amount to twenty-two guineas, and for M.D. or Ch.M. ten guineas.

United College, St Andrews, affords considerable facilities to students beginning a medical course, especially if they are willing to combine it with a preliminary two years of study for an Arts or Science degree. Under the new regulations, which make it possible to study botany, zoology and chemistry as part of the course for an M.A. degree, the medical student can, during the early years of his medical course, hold some of the many bursaries or scholarships which the University of St Andrews has to offer. For women the large number of Taylour Thomson bursaries (several are at present vacant), to which female medical students have a preference, makes the course in St Andrews specially advantageous. There are several £20 bursaries for men. The cost of rooms and living is considerably under that in the larger towns. For women there is an excellent residential hall, and other students may attend the common dinners in the Union. The medical course in St Andrews extends over two years, and embraces all the subjects of the first two professional examinations. The other subjects must be studied elsewhere, but the student may take all the examinations in the University and graduate there. There are special buildings for the Medical School.

University College, Dundee, is now able to offer the student the option of completing his course in Dundee and graduating in the University if he so choose. There are at present several bursaries which may be held by medical students. The chief attraction of the school in Dundee is its abundance of oppor-

tunities for clinical work. With the completion of the Caird Wards the Royal Infirmary has fully 300 beds, including special wards for obstetrics, gynecology, children, and ophthalmology, and in addition there are an epidemic hospital and a large asylum, and an hospital for incurable diseases has been opened. There are four largely-attended dispensary districts. In addition to the College and class libraries, the students have the use of the Dundee Medical Library, a collection of 3000 volumes, which is being steadily added to. The small number of students at present in the school enables each to secure much more individual tuition, and a very much larger amount of clinical work and experience than is possible in the larger schools.

The classes and fees at the United College, St Andrews, are:—Natural philosophy, £3, 3s.; practical physics, £2, 2s.; chemistry, £3, 3s.; practical chemistry, £2, 2s.; natural history, £3, 3s.; practical zoology, £2, 2s. (when taken along with the ordinary classes the fee for each of these three practical classes is £1, 1s.); botany, £3, 3s.; practical botany, £2, 2s.; physiology, £3, 3s.; anatomy, £3, 3s.; practical anatomy, £3, 3s.; materia medica, £3, 3s.; practical materia medica, £3, 3s.

The classes and fees at University College, Dundee, are:—Physics, £3, 3s.; practical physics, £3, 3s.; chemistry, £3, 3s.; practical chemistry, £3, 3s.; natural history, £3, 3s.; practical zoology, £3, 3s.; botany, £3, 3s.; practical botany, £2, 2s.; physiology, £3, 3s.; practical physiology, £3, 3s.; anatomy, £3, 3s.; senior anatomy, £2, 2s.; practical anatomy (winter), £3, 3s.; (summer), £2, 2s.; surgery, systematic, £2, 2s.; operative, £2, 2s.

PROFESSORS AND LECTURERS.

Physics— Professor Butler.
Chemistry— Professor Purdie.
Zoology— Professor Mackintosh.
Botany Lecturer—
Mr R. A. Robertson.
Physiology—Professor Pettigrew.
Dr Harris.
Anatomy Lecturer—
Professor Musgrove.
Materia Medica—
Professor Marshall.

DUNDEE

PROFESSORS AND LECTURERS

Physics— Professor Kuenen.
Dr M'Cowan.

Chemistry— Professor Walker.
Dr Lumsden.
Zoology— Professor D'Arcy Thompson.
Botany— Professor Geddes.
Physiology—Professor Waymouth Reid.
Anatomy— Principal Yule Mackay.
Surgery, Systematic and Operative—
Professor MacEwan.
Surgery, Clinical—
Professor MacEwan.
Mr D. M. Greig.
Medicine, Systematic—
Professor Stalker.
Medicine, Clinical—
Professor Stalker.
Dr Mackie Whyte.
Materia Medica—
Professor Marshall.
Pathology—Professor Sutherland.
Midwifery and Diseases of Women—
Professor Kynoch.
Forensic Medicine—
C. Templeman, M.D., D.Sc., M.O.H.
Ophthalmology—
A. M'Gillivray, M.D.
Mental Diseases—
J. Rorie, M.D.
Diseases of Ear and Throat—
G. T. Guild, M.B.

New Books and New Editions

Surgery: Its Theory and Practice. By W. JOHNSON WALSHAM, F.R.C.S. Seventh Edition. Pp. 953. Illustrated. J. & A. Churchill. 1900. Price 15s.

MR WALSHAM, in the preface to his seventh edition, tells us that 33,000 copies of his book have been sold, and this fact constitutes the best proof of its being appreciated by a certain class of readers. Though somewhat expanded and improved in the matter of illustrations and type, the book still gives one the impression of having been written in a great hurry. Here and there it is sufficiently full and instructive: in other parts it is so boiled down as to have lost all nutritive value. Take for example the account of Macewen's osteotomy for genu valgum, dismissed in two or three lines. "Macewen's operation consists in

chiselling through the femur just above the epiphysis, .t leavin the posterior surface, which is in contact with the popliteal arte intact, and snapping this across by forcibly bending the bon It is rather difficult to conceive the particular class of rea who would derive much satisfaction or instruction from such account of the operation.

The chapters on General Pathology, revised by Dr Andrewes, and rewritten by Professor Kauthack, are fairly good, though scrappy: the pathology is mixed up with a quantity of practical surgery, some of it decidedly antique. The definition of *sinus* and *fistula* would certainly not pass muster before most examiners in the Edinburgh school.

Bleeding is recommended to be done from the median basilic vein with an old-fashioned lancet and a piece of tape and a pad.

In speaking of melanotic sarcoma no mention is made of the invasion of glands in this variety, or of the alternative view of these tumours being in reality carcinomatous.

In the section devoted to the general pathology of injuries, Lister's name does not even appear in the discussion of the treatment of wounds.

The statement is made that in all cases of cirsoid aneurism excision of the whole growth after ligature of the supplying vessels is the best treatment. This would appear to be a rash proceeding in some cases one has seen, where the tumour spread over nearly half the head.

The chapter on the surgery of the brain is perhaps the best in the book—concise and up-to-date in most respects. The nomenclature of the various intracranial hæmorrhage is the correct one, viz., subcranial, subdural and subarachnoid; and the advice about hernia cerebri is sound; more than can be said for what is found in most text-books.

In speaking of cerebral abscess Mr Walsham places the subnormal temperature in such cases amongst the *septic* signs, and not amongst those due to intracranial pressure.

The surgery of the abdomen is well done, and one cannot complain of want of detail in operations on the intestine, no less than thirty diagrams being given to illustrate the different methods of enterectomy.

In discussing injuries to the bladder, a good plan is suggested for diagnosing rupture of the bladder, and determining whether it is intra or extra peritoneal, by the inflation of air—and a case in point is given. One can hardly follow, however, the author in approving of the injection of milk into the bladder (as a harmless antiseptic fluid !) to see if the stitches that have been put in have made the bladder watertight.

The section devoted to Fractures and Dislocations is short, but on the whole good. No notice is taken of fracture of the radius above the insertion of the pronator teres, and the necessity for special treatment in that fracture.

The chapters on the Ear and Eye are good.

Mr Walsham does not believe in preliminary ligature of the lingual artery in excision of the tongue; and in excision of the larynx advocates doing the preliminary tracheotomy at the same time as the major operation.

He does not mention the posterior opening of pancreatic cysts; certainly the best method in most cases.

Mr Walsham's remarks on the treatment of appendicitis are such as would meet with the approval of most surgeons, but he seems to infer that it is proper to wait for several attacks in the recurrent form of the disease before operating, while he admits immediately afterwards that under those circumstances the operation may be extremely difficult and dangerous.

On the whole the book must be said to be considerably improved, though one regrets its inequality. The pictures are mostly old friends from Bryant's "Surgery" and elsewhere, and are, perhaps, sufficient for the purpose, if they cannot be called artistic. Several excellent skiagrams have been added. The reproductions of microscopic specimens are mostly poor, for instance the plate of Gonococcus, which is scarcely recognisable.

Misprints are in considerable number: "plevis" for pelvis. "temperosphenoidal," "variocele," and many others, while under the head of monstrosities may be put "Lipoma arborescence" and "Appendiscectomy."

The Principles and Practice of Veterinary Surgery. By WILLIAM WILLIAMS, F.R.C.V.S., F.R.S.E., etc., Principal and Professor of Veterinary Medicine and Surgery at the New Veterinary College, Edinburgh, etc. Ninth Edition, revised by the author, assisted by his son, W. Owen Williams, F.R.C.V.S., F.R.P.S., F.R.S.E. Pp. 760. Numerous illustrations. Edinburgh and Glasgow: Menzies & Co.

THE appearance of a ninth edition of this text-book indicates that it is still holding its place in the library of the veterinary student and practitioner.

A careful perusal shows that this popularity is due to the vast amount of clinical experience Principal Williams brings to bear on the diagnosis and treatment of disease in the lower

animals, and to the agreeable manner in which facts are presented.

Whilst this is indisputable, we would venture to offer a few criticisms and suggestions with regard to some of the views of pathology presented in the book. While most of the explanations of morbid processes conform to modern views, too often the pathology is antiquated, depending on such authorities as Goodsir, Aitken, Spence, Cooper, whose conclusions, invaluable in their time, have in many cases given place to more correct knowledge dependent on careful modern research.

For example, the description of inflammation does not altogether correspond with modern knowledge, and the rôle of bacteria in the causation of disease is not, to our mind, sufficiently emphasised.

To particularise, septicæmia and pyæmia might be more clearly differentiated. The latter condition seems to be described under the terms "diffuse phlebitis," "surgical septicæmia" (p. 577).

The statement that pus is "due to an exudation rich in leucocytes, whose coagulability is arrested by the action of pyogenic schizomycetes" does not quite meet modern requirements.

Some paragraphs, evidently remaining from old editions, might with advantage be struck out—for example, the paragraph comparing mucus, epithelium, and pus, and leading us to the conclusion that "these are pathologically equivalent parts" (p. 39); seeing that Principal Williams completely rejects these conclusions in p. 41, where he gives the modern view of abscess-formation.

With regard to "scrofulous ostitis," a modern description of its pathology might be substituted. It is indefinite and incorrect to say that "the blood conveys a degraded form of an albuminoid matter, which is deposited in the structure of the bones, and there excites a form of strumous inflammation leading on to caries." One expects a description of the action of the tubercle bacillus in causing formation of giant cell-systems and caseation. When we are mentioning the tubercle bacillus, we may note that osteo-sarcoma is said to be due to the scrofulous diathesis (p. 199).

Again, most pathologists nowadays would object to Principal Williams' belief that "counter-irritants excite within the originally diseased structures a *reparative* inflammation," and that they do not act by reflex action (p. 320). On the other hand, following this, some excellent "hints on blistering generally" are given (p. 322).

The author's views on the rational shoeing of horses are well

known, and are well supported by the arguments in Chapter xviii. His appeal that the "frog" should be allowed the function prescribed for it by nature is given with great force, and carry conviction to the unbiased mind.

The section on tumours is short but well drawn up, and the distinctions between tumours and inflammatory new formations are laid down clearly. It is interesting to note that nasal polypi are placed among the fibromata, and not amongst the myxomata, where some human pathologists place them.

Principal Williams evidently includes aneurisms under dilatation cysts—"cysts formed of dilated portions of blood-vessels shut off from the main stream" (p. 426).

Thrombosis is described on the lines of Virchow's classical observations, as "coagulation of blood in the living vessels" (p. 584), but a little earlier (p. 576) the term "thrombus" is applied to a hæmorrhage into the areolar tissue resulting after the operation of "bleeding." It would be well to confine the term to the former condition.

One might also refer to the description of hyaline degeneration of the intima of arteries (p. 59), and to the causation of lymphangitis, amongst other things, and criticise the views laid down, but space forbids.

Our perusal of the volume thus gives us the belief that, while the pathology might be brought up to date, the remainder, particularly that dependent on the author's experience as to diagnosis and treatment, are, so far as we can judge, most excellent.

The Students' Handbook of the Surgery of the Alimentary Canal, being an Abridged and Amended Edition of the Author's Treatise on the same subject. By A. ERNEST MAYLARD, M.B., B.S.Lond., Surgeon to the Victoria Infirmary, Glasgow. Pp. 510, with 97 illustrations. London: J. & A. Churchill. 1900. Price 8s. 6d.

THE author's original treatise on the Surgery of the Alimentary Canal, published four years ago, has already established itself as a standard work of reference, and he has no need to apologise for issuing the present edition. By omitting detailed reports of clinical cases, and lengthy quotations and references to the work of other authors, the bulk of the work has been materially diminished without at the same time destroying the continuity or completeness of the original text. The additional experience of four years has been incorporated in the present issue, which

brings the work well up to date and furnishes the student and general practitioner with a faithful and valuable summary of the present state of intestinal surgery.

The rapidity with which this department of surgery has advanced, and is advancing, is so great that the practitioner is apt to lose touch with its most recent developments, more particularly with regard to operative treatment. And yet there is no branch of professional work in which it is more necessary that the general practitioner and the operating surgeon should go hand in hand. There are so many abdominal conditions which are only amenable to surgical treatment in their early stages, that unless the family doctor into whose care they in the first instance come, is alive to the necessity of making an early and accurate diagnosis, and is conversant with the possibilities of surgical intervention, the favourable period is apt to slip past, and the patient is only brought to the surgeon to be told that, at best, a palliative operation is possible. That this is true of the various forms of intestinal obstruction and of perforations of the alimentary canal goes without saying, yet how often, even in such cases, is surgical aid invoked too late. The majority of practitioners have yet to be convinced that the operation of pylorectomy should be performed before the malignant tumour forms a palpable swelling in the epigastrium, and that carcinomatous strictures of the cæcum, sigmoid flexure, and other parts of the intestinal tract, may be radically dealt with if only the patient is not allowed to go on until obstruction threatens or cachexia ensues.

A careful study of the work before us will do much to clear away many old and false traditions, and to bring the reader into line with the most advanced views on the various subjects dealt with.

The work is divided into four parts, dealing respectively with the Œsophagus, Stomach, Small and Large Intestine, and Rectum; the affections of the mouth, fauces, and pharynx above, and those of the lower parts of the rectum and anus, such as hæmorrhoids, fistula, etc., not being included in the general scheme of the work.

The anatomy and physiology of each segment of the tract is briefly studied before the injuries and diseases are described. Each section ends with a chapter on operative treatment.

Many of the illustrations are excellent, while others are too diagrammatic to be of value.

We congratulate the author on the production of the work as heartily as we congratulate the profession on possessing it.

Medical Electricity: A Practical Handbook for Students and Practitioners. By H. LEWIS JONES, M.A., M.D. Third Edition. Crown 8vo, pp. 532. London: H. K. Lewis. Price 10s. 6d.

THIS well-known text-book has now reached its third edition and it fully deserves the popularity it has achieved. The present issue is no mere reprint of the last: much new matter has been added, including a short and satisfactory chapter on X-ray work, whilst all the sections have been carefully revised, so that the manual may be regarded as thoroughly up to date and representative of the present state of knowledge in the field of electro-therapeutics.

Those who have given some attention to electrical treatment will find much to interest them in the chapter on statical electricity, where the various newer forms of apparatus that are likely to be of practical utility are described, and the indications for their employment defined. Owing to the considerable cost of the apparatus, however, it is unlikely that this form of treatment will ever become very general; to most practitioners the interest of the book undoubtedly depends on the way in which it treats of more ordinary procedures, and this is excellent in all respects. The author has the gift of anticipating the difficulties which are likely to present themselves to those whose work lies for the most part in other departments of medicine, and of giving the directions which will enable those difficulties to be avoided. Perhaps it is chiefly on this account that one can warmly recommend the handbook to every student of medicine.

A Practical Treatise on Sexual Disorders of the Male and Female. By ROBERT W. TAYLOR, A.M., M.D., Clinical Professor of Venereal Diseases at the College of Physicians and Surgeons (Columbia University), New York, etc. Second Edition. Pp. 438, xii., 91 illustrations and 13 coloured plates. London: Henry Kimpton. 1900.

IN bringing out a second edition of his work on Sexual Disorders, Professor Taylor has taken the opportunity of thoroughly revising, and in some degree modifying the text; the result is a readable book and a reliable presentation of the subject. Twenty-seven chapters are devoted to the sexual disorders in the male, and only eleven chapters to those which occur in the female; and apart from the amount of space, there can be no doubt that the predominant part of the book is that dealing with the reproductive troubles in the male. On this subject the work is authoritative: the anatomy of the organs is well done; the various forms

of impotence are clearly described and differentiated; and such difficult matters as sexual perversion, masturbation, and conjugal onanism are dealt with delicately, and yet with sufficient fulness for the medical reader. More might, however, have been said about some of the malformations of the penis and urethra, and more particularly about some of the recent skilfully contrived and really beneficial operative procedures that have been employed in ectopia vesicæ and epispadias. The part of the book devoted to the disorders of the female sexual organs is not nearly so complete or so well arranged as the first part; in dealing with female sterility, for instance, the attention is directed almost entirely to morbid conditions of the external genitals to the exclusion of other equally important matters. The illustrations, which are numerous, deserve praise, and the get-up of the book is excellent; the index also is more than a mere alphabetic list. "Grip orchitis" is a name which may be accepted in the United States, but it is strange to medical ears on this side of the Atlantic.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

SURGERY

SURGERY OF THE PLEURA AND LUNG

By ALEXANDER MILES, M.D., F.R.C.S.Ed.,
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IN introducing a discussion at the Société Belge de Chirurgie, on the 22nd of June of this year, M. H. Verneuil gave an able summary of the present-day position of "pleuro-pulmonary" surgery. In his introductory remarks he pointed out that while the operations of pleurotomy and pneumotomy were practised by Hippocrates, it is only within recent years that any solid advance has taken place in this department of surgery.

The first part of his address is devoted to some questions of diagnosis. While our modern methods of diagnosis enable us to determine the situation of pulmonary lesions with sufficient accuracy for the purposes of the physician, they still fall short of the demands of the surgeon, who requires that the localisation of the focus on which he is to operate shall be mathematically accurate. Tuffier has pointed out that if we trust to stethoscopic evidence we are apt to place lesions above the level of the root of the lung too high, and lesions below that level too low. Superficial lesions can be located with considerable accuracy, but in the case of those which are deeply situated, and especially when the surrounding tissues are condensed, the

sounds are so propagated as to lead us into error. Bazy quotes a case in which a lesion at the level of the spine of the scapula was diagnosed stethoscopically to be at the base of the lung.

Exploratory punctures give more valuable evidence, both as to the site and nature of the lesion, when they furnish positive results, but when negative they are valueless; the site of the fluid may have been missed, or the fluid may be too thick to flow through the canula. Even when fluid is withdrawn it may be that several cavities exist, while only one has been tapped, and that not the chief one. Dutar has estimated that 22 per cent. of exploratory punctures are negative.

It has been suggested that valuable aid might be obtained by direct palpation of the lung through an opening in the pleura; but the author does not place much value on this method, on account of the limited space available, and the obstacle which pleural adhesions offer to wide examination.

An examination of the sputum furnishes valuable evidence as to the nature of the lesion, but its size can not be safely gauged by the quantity expectorated. A large cavity may exist although the patient expectorates little, or, on the other hand, quite small lesions may be associated with profuse expectoration.

From the surgeon's point of view it is most important to determine the existence and distribution of pleural adhesions, but as yet we have no certain means of establishing this point. A needle passed into the lung should move with respiration if there are no adhesions, and remain stationary when these exist, but this test has been found in practice to be wanting in exactitude. Sapiejko's proposal to insert an exploratory needle connected with a manometer containing physiological solution into the pleura and observe whether the fluid moves with respiration, is more rational, but inconvenient.

Radiography and radioscopy have already proved valuable aids in the diagnosis of intra-thoracic conditions, and the author anticipates greater help from them in the future when methods are improved and experience gained. Siromahoff has been able to diagnose bilateral tuberculosis with left pyo-pneumothorax, pleuro-pulmonary abscess, simple and purulent pleurisy, thoracic abscess, and tubercular cavities, among other conditions, by means of the Röntgen rays. Multiple lesions are less likely to be overlooked by this than by other methods of investigation. It is, however, not infallible, and negative results have been obtained where auscultation proved beyond doubt the existence of a cavity. As yet we are only able to learn the site of the lesion by the X-rays; they tell nothing of its nature.

The second part of the paper deals with questions related to operative interference in affections of the pleura and lung.

It is necessary to include **tumours of the thoracic wall**—chondroma, sarcoma, fibroma, and mixed tumours—as these frequently extend to the pleura and lung, even when they are believed from external evidence to be localised to the parietes. In such cases the prognosis is always grave—the operation mortality alone being between 25 and 30 per cent.—as the intrathoracic prolongations of the tumour are usually widespread, and recurrence is very common although not inevitable. As the presence of a tumour does not, as a rule, induce adhesions, the opening of the pleura is often followed by pneumothorax—a complication which adds to the gravity of the operation.

Traumatic lesions penetrating the pleura and involving the lung, from stabs, gun-shot wounds, or crushes, give rise to symptoms of pneumothorax from entrance of air into the pleural cavity, and hæmothorax from damage to the lung substance or to an intercostal artery. Hæmoptysis is the best diagnostic sign of the damage to the lung, although in exceptional cases there may be no blood in the sputum even although the lung is grossly damaged. The existence of hæmothorax, with evidence of considerable hæmorrhage taking place, indicates immediate operation for the purpose of suturing the injured lung. It is to be borne in mind that penetrating wounds of the lower part of the chest often implicate the peritoneum.

When hæmorrhage alone is present it is more difficult to decide when to operate. Very often the patient is extremely collapsed, with a very weak pulse, dyspnœa and marked lividity, and is apparently moribund soon after the accident, and yet within twenty-four hours he is completely transformed and makes a speedy and satisfactory recovery without surgical aid. In such cases any operation will intensify the shock, and may turn the balance against the patient. On the other hand, if bleeding is going on time presses, and the patient's only chance lies in an operation. It is only when there is good reason to believe that the hæmorrhage is continuing that surgical interference is indicated.

For hæmorrhage from the lung, plugging of the pleural cavity through the accidental wound is a procedure which is valueless and should be abandoned.

Fracture of the ribs may in some cases produce symptoms exactly like those of penetrating wounds, as well as subcutaneous emphysema, which may rapidly become widespread. The author suggests that in such cases the integument may be incised at the level of the fracture with a view to suturing the wounded lung. Terrier believes that it is advisable to operate in penetrating wounds with the object of preventing infection of

the blood effused into the pleural space. Although the patient may escape the immediate risks of the injury he is only safe after all the blood is reabsorbed, and this may take a very long time. Pleurotomy with drainage is in such cases indicated.

Traumatic hernia of the lung if large and pedunculated should be resected. When not due to injury the herniated portion should be returned, the sac occluded, and the opening closed. Both forms of hernia are very rare.

Foreign bodies.—Projectiles, deeply lodged, should never be sought for at the moment, the primary object of the surgeon being to arrest hæmorrhage and to counteract the effects of pneumo-thorax. Secondary operations may be called for to prevent infection.

Foreign bodies may pass into the bronchi, setting up ulcerative or gangrenous processes in the lungs, which may necessitate pleurotomy or pneumotomy.

Empyœma.—All are agreed that purely medical treatment is of no avail in empyœma, and it is generally recognised that, as so many factors are at work in bringing about cure in this condition, the mere withdrawal of the pus does not give satisfactory results. It is necessary to decide in each case which of the various surgical procedures — puncture, pleurotomy, the operation of Estlander, Schede or Delorme (decortication)—is most appropriate, and to modify these to suit the requirements of individual cases.

In *recent* cases, while the lung is still expansile, the choice of operation is between thoraco-centesis and pleurotomy (with excision of rib). The former, the author believes, is inefficient as it has usually to be frequently repeated, and very often the thorax has to be opened after all. Although successes have been reported by mere tapping, the author believes that they are not sufficiently numerous or encouraging to warrant the practice. Empyœma should be treated like any other abscess by a free incision and drainage.

Desguin, speaking in the discussion, gave a qualified approval to puncture in a few selected cases, especially in children. At the same time he expressed the opinion that fewer extensive operations for chronic empyœma would be necessary if the acute condition were treated earlier and more thoroughly. An acute empyœma, he thinks, should be drained for at least five or six weeks.

With regard to the question of washing out the pleura after incision there is a diversity of opinion. Verneuil agrees with Terrier that in the majority of cases it is calculated to do more harm than good, by introducing fresh elements of infection and disseminating them more widely throughout the cavity. Plain

sterilized water or salt solution he considers the most suitable fluid when lavage is indicated.

Desguin agrees that lavage should be avoided at first, but believes that it is sometimes necessary in the later stages, when the temperature rises and there is evidence of septic changes in the discharge. He uses a weak solution of chloride of zinc. Willems strongly opposes the routine use of lavage, as he finds that empyœmata treated without washing out cure more quickly than those in which it is employed. It is only when there is fever and septic infection that it should be employed. He finds oxygenated water by far the best fluid for irrigation.

The author and Gallet are agreed as to the value of curetting the walls of an empyœmatous cavity.

The injection of artificial serum, of iodoform emulsion, tincture of iodine, permanganate of potash, etc., appears to be completely discredited.

When the empyœma is double, both sides should be operated upon.

In *chronic* empyœma, when the lung is retracted and a persistent space left in the pleural cavity, with sinuses, the operations of Estlander, Schede, and Delorme are available. The value of the X-rays as an aid in planning such operations is insisted upon.

The statistics of various surgeons, borne out by radiographic evidence, prove that subcutaneous resection of ribs, and resections of the chest-wall, result in radical and complete cure—the operation of Estlander being on the whole the best, especially in cases comparatively recent. In very large cavities which have existed for a long time, it is impossible to obtain complete occlusion by this method, and Schede's procedure has to be adopted. The operation of Delorme ("pulmonary decortication") is not always possible, and has few supporters. Whichever operation is selected, all are agreed that the resection must be very extensive if a complete cure is to be brought about.

Depage does not think that any of these operations are sufficient when the lung lies completely collapsed in the costovertebral hollow. The cavity can only be occluded, he thinks, by including resection of the clavicle and first rib, an operation which he has himself performed. Willems, however, considers such extensive operations too full of risk in the extremely weak condition in which the patients usually are met. He advocates the performance of Estlander's operation whenever signs of scoliosis appear, as the best means of avoiding the necessity for more severe measures.

In encysted empyœma the diagnosis is not always easy,

but radiography often gives valuable aid. When located and incised, the finger must be introduced to break down septa and secure efficient drainage.

The diagnosis of interlobular collections is still more difficult, and the treatment is the same as that for abscess of the lung.

Caries of the ribs frequently leads to cold abscess which opens into the pleura; or, on the other hand, may be due to pus spreading from within. It is necessary to remember therefore that a cold abscess of the chest wall may communicate not only with the pleura, but even with a focus in the lung.

Tumours of the Pleura and Lung.—Primary cancer of the lung, which is very rare, is almost never diagnosed, and even if it is, no operation for its relief is advisable.

A case of actinomycosis of the lung has been successfully operated upon by Karewski.

Primary hydatid cysts are not very common, and are very difficult to diagnose. As in other structures an exploratory puncture may give valuable evidence. When recognised this condition should be treated by incision without delay, lest the cyst rupture into the pleura and the disease become disseminated. Treatment by puncture is dangerous on account of the risk of determining rupture or permitting of leakage of the cyst contents into the pleura. Pasquier's statistics show that the mortality from puncture is about 64 per cent., while pneumotomy gives about 85 per cent. of *cures*. It is not safe to trust to the hydatid cyst opening into a bronchus and being thus spontaneously evacuated. The possibility of an hydatid of the liver opening into the thorax and implicating the pleura and lung, has always to be borne in mind.

The author lays considerable stress on grave risks of suddenly establishing a pneumothorax by opening the pleura when no adhesions are present.

Desguin made light of this risk which he considers to be theoretical rather than practical. He has never seen any serious results follow the admission of air into the pleura. In a majority of cases calling for incision sufficient adhesions exist to prevent any dangerous symptoms from opening the pleura. In his reply Verneuil stated that many cases have been recorded where such results did follow, and experiments on animals confirmed his statements. At the same time he has never himself met with any difficulty of this kind clinically. When there is reason to fear such a result the lung should always be fixed to the parietal pleura by sutures. All other methods of establishing adhesions, by caustics, etc., belong to the domain of "pre-historic surgery."

Pulmonary Cavities.—Under the heading *Collections cavi-*

taires du poumon the author includes abscess of the lung, bronchiectasis, pulmonary gangrene, and tubercular cavities. Although widely different pathologically these conditions all call for the same surgical treatment, namely pneumotomy. The objects are the same in all, to evacuate and drain a septic cavity, to get rid of the toxic products, and to promote cicatrisation and obliteration of the cavity. The technique varies little if at all, but the indications for operation are different.

In **pulmonary abscess** treatment by incision is rational and justifiable and as a rule yields fairly satisfactory results, especially when the abscess is associated with typhoid. The author favours the resection of segments of ribs rather than the raising of a large flap of the thoracic wall, and does not agree with Malbot that simple pleurotomy is sufficient; it may succeed in a few cases, but the sacrifice of pieces of a few ribs is amply compensated for by the better access and freer drainage obtained.

Bronchiectasis.—It is only in cases where a single sacciform cavity exists that operation has been satisfactory in bronchiectasis. The mortality of the operation is high and the successes few. When the general condition of the patient is bad, it is wise to abstain from operation.

In **Gangrene of the Lungs** the results of operation are very good, especially when the focus is localised and follows an acute inflammatory affection. The mortality with surgical treatment is 40 per cent., against 80 per cent. with medical treatment. The gangrenous area is usually near the base of the lung, and the pleural cavity is generally protected by adhesions either over the gangrene or around it. If no adhesions exist the parietal and visceral pleura should be stitched to one another. The cavity should be carefully cleansed, gently scraped, and freely drained, and it is an open question whether lavage should be employed or not.

Tubercular Cavities. — The idea of treating tubercular cavities by operation has always proved very attractive to surgeons. It is necessary, however, to consider the general condition of the patient, and to determine whether the tubercular lesion in the lung is single or not, before attempting surgical means of treatment. Operation is only available in single, medium-sized cavities, especially when situated near the base, and where there is good reason to believe that the rest of the lung is healthy, and that the patient is able to stand a severe operation. It is, however, just in such cases that natural cure is likely to result. It is also to be borne in mind that the mere incision and drainage of a tubercular cavity in the lung is no more likely to result in cure than similar treatment in any other cold abscess is. Pneumotomy with cauterisation and drainage has not

yielded good results. It must be confessed therefore that although successful cases have been reported, there is not much encouragement to attempt operative treatment in tubercular pulmonary cavities.

For **Tuberculosis of the Lung** the results of operation have been variable, but on the whole bad. In the few cases which have ended favourably it is more than likely that cure would have followed from medical treatment.

The author concludes: (1) that many affections of the pleura and lungs formerly incurable have greatly benefited by modern surgery, especially empyœma, traumatic lesions, certain tumours, and pulmonary cavities. (2) That exact diagnosis is still one of the great difficulties in the way of the surgeon; but that much may be hoped for from radiography. (3) That experience has proved that half-hearted operations are futile. The surgeon must always be prepared to go wide of the disease. Good drainage is indispensable in cases not aseptic, but lavage as a rule is not advisable. (4) That pneumopexie is to be employed when no adhesions exist, with a view to avoiding the risks of sudden pneumothorax. (5) That, except in a few very rare cases of tuberculous cavities, operations for tuberculosis of the lung are not justifiable.

A full bibliography of the recent literature on the Surgery of the Thorax is appended to the paper.[1]

DIETETICS

ARTIFICIAL NUTRITIVE PREPARATIONS

By G. LOVELL GULLAND, M.A., B.Sc., M.D., F.R.C.P.Ed.,
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THESE "children of the modern marriage of science and business" are so numerous, and continue to appear with such regularity, that it is not wonderful that the practitioner is often puzzled which of them to use, or whether to discard them all as useless and to hark back to the beef-tea and whey of twenty years ago. It seemed to me not amiss to collate the results of some recent papers in the light of my own experience on the subject.[2]

[1] *Annales de la Société Belge de Chirurgie*, June 1900.

[2] References will be found in papers by Lewin (*Ueber den Einfluss von neueren Nährpräparaten auf die Intensität der Darmfäulniss. Zeitschr. f. diät. u. physikal. Therap.*, 1900), Marcuse (*Diätetische Nährpräparate der Neuzeit. Therap. Monatsh.*, May 1900), and Bardet (*Ueber Künstliche Ernährung. Die Heilkunde*, 1899), to all of which I am indebted.

Von Leyden has pointed out that a nutritive preparation should have the following qualities: it should be a concentrated food, that is, in very small quantities it should have a high nutritive value; it should be capable of being given in fluid form; it should be easily digested and easily borne; and should have as pleasant a taste as possible. The indication for the use of such preparations is in conditions which render difficult the taking or utilisation of ordinary food. When there is no appetite, or the patient shows a disgust for food, when chewing and swallowing are rendered difficult by disease of the mouth or cessation of secretion of saliva, when the mucous membrane of the stomach is painful or diseased, when the movements of the stomach or the secretion of gastric juice are impaired, when the intestinal functions are disturbed in any way; in all these conditions one kind of food or another may be contra-indicated, and the use of a nutritive preparation be desired which is fitted to compensate for the failure of the special function.

The two factors in the value of these preparations which are of most importance are their digestibility and the possibility of their being assimilated and utilised after digestion. The preparations which are most likely to fulfil these requirements are those made from the albumins, and especially the preparations derived from animal albumins. The oldest of these which has survived is Liebig's extract, and this still enjoys considerable popularity, though it has long been recognised that it owes its value not to the albumin it contains, which is very small in amount (20·5 per cent.), but to the extractives (38·29 per cent.) and mineral salts (22·74 per cent.), of which the former excite the appetite and act as stimulants, while the latter are necessary for the building up of the body. It has no power, however, to replace albumin in the diet.

A further group of preparations containing animal albumins are the meat-juices, all of which, however, are extremely dear for the amount of albumin which they contain. Valentine's meat-juice, for example, of which 150 c.cm. cost 4s. 6d., only contains 5 per cent. of albumin. Carno is a mixture of blood and meat extract, and Puro, which has recently been introduced, is the only one with a fairly large percentage of albumin (31·01). It is a mixture of commercial albumin with meat extract and vegetable juices, and seems sometimes to be useful.

Bovril, a meat extract to which meat powder has been added, and the similar Toril, made up of meat extract and some soluble albumin, have too small a percentage of albumin to be taken into consideration as albuminous foods, and the addition of cheap meat-powder or of albumin rendered soluble artificially, must be

regarded rather as a deterioration of the meat extract, with its valuable extractives, than as an improvement.

Alongside the extracts and meat-juices stand the peptone preparations, which owe their vogue to the view, formerly generally accepted, that all albumin, in order to be absorbed, must first be converted into peptone. Brücke and Voit have shown, however, that unaltered albumin is always present along with peptone in the stomach and intestine; and Voit enunciated the proposition that the peptones could only act by sparing albumin, as they cannot prevent loss of albumin in the animal body, and that only unaltered, unpeptonised albumin can be used in the building-up of organs. Since that time the use of preparations which consisted mainly of true peptones has been gradually given up.

Only those preparations resulting from the action of superheated steam on meat, which contain mere traces of true peptone and consist mainly of albumoses, have remained longer in use. Among these are Koch's and Kemmerich — Liebig's peptone (incorrectly so-called) and the latter is still sometimes used. It contains from 45 to 55 per cent. of soluble albuminous substances, mainly albuminates and albumoses, and in addition the extractives and salts of the meat. While it has thus a distinct value, it has the disadvantage, in common with all the peptone and albumose preparations, that it directly irritates the stomach and intestine when given in large quantities. The most recent and most widely advertised of these preparations is Somatose, a soluble powder which consists mainly of albumose (80 per cent.) with about 2 per cent. of peptone, and which is quite free from extractives. When it was first introduced many papers were written about its effect in improving nutrition, in increasing milk-secretion, etc., and it is certainly useful for these purposes when given with other food in small doses and for a short time. But when given in large quantities or for a long period it disorders the stomach and causes vomiting, and by increasing the peristalsis of the intestine produces diarrhœa with watery stools. Theoretically the whole of the Somatose which is ingested should be absorbed, but in practice this never occurs, and this, along with the above-mentioned unpleasant property of the substance, makes it impossible to use it extensively.

Another important disadvantage from which these preparations suffer, is the total disproportion between price and nutritive value. We have to pay heavily for their greater digestibility, and there is no doubt that in most cases domestic cookery, intelligently performed, is able to do without such substitutes. Klemperer has arranged a table, showing the relation between

price and nutritive value in the case of these preparations and some common foods. One can buy for a shilling, at average prices—

In Valentine's meat-juice	5·9	calories
„ Somatose . .	16·6	„
„ Liebig's peptone .	18·5	„
„ Koch's peptone .	31·8	„
„ beef . . .	511	„
„ eggs . . .	1065	„
„ milk . . .	3440	„
„ sugar . . .	4920	„

The converse of this table is another, showing how much of these substances must be taken in order to ingest a definite amount of nutriment. The standard chosen is 70 calories, which is contained in one egg or 100 c.cm. of good milk, and this is also contained in

254 c.cm. of Valentine's meat-juice,
22·5 grm. of Somatose,
51 grm. of Liebig's peptone,
50 grm. of Koch's peptone.

These tables and the foregoing considerations show pretty conclusively that while such preparations may be useful as a means of introducing into the body a certain amount of nutriment in emergencies, when the digestive apparatus has struck work, they can never save the patient from starvation if they alone are given for any time.

All these considerations, and in particular the comparative failure of Somatose, led to a desire to produce preparations which stood nearer to true albumin; and a further element lay in the discovery that some albuminous bodies contain phosphorus in organic combination, that these are nearly allied to the albuminous substances of the cell-nucleus, and might be supposed, therefore, as the nucleus plays such an important part in cell-life, to assist in the preservation and increase of the albuminous parts of the body. Casein, the most important proteid of milk, is one of these phosphorus-containing albumins. In addition it combines easily with alkalies to form soluble alkaline caseinates, and is moreover a very cheap albumin because of its occurrence as a by-product in creameries. It is practically evaporated skim-milk. The first of these caseinates to be used were Eucasin (casein-ammonia) and Nutrose (casein-soda). Both are white, tasteless, odourless, easily soluble in water, and contain 85 to 90 per cent. of albumin. They can be given for a long time, are well

borne and well absorbed, and have the additional advantage of being relatively very cheap. Sanose, introduced rather later, is a mixture of casein with albumose or peptone. Sanatogen, Plasmon, and Eulactol are bodies similar in character. Sanatogen is an almost completely soluble mixture of casein (95 per cent.) and glycerophosphate of soda (5 per cent.), the latter ingredient being supposed to have a specially favourable influence on the nervous system. Plasmon is a soda combination of casein, produced by the bicarbonate instead of the oxide or carbonate; while Eulactol, a very recent introduction, has been produced in response to Von Leyden's warning against too restricted a use of albumin alone, and is a mixture of fat (14 per cent.), carbohydrate, mainly milk-sugar (46 per cent.), and casein (28·5 per cent.). The choice of one or other of these casein preparations must depend, and may be allowed to depend, on individual preference, but there is no doubt that they are of great value, because they allow the introduction of large quantities of an albumin which is easily digested and absorbed, and because their cost is not too great. In chronic diseases associated with loss of weight, in convalescence, in old age, etc., they may be of great use.

Vegetable albumin has been much less utilised in producing artificial foods. There are, however, two preparations which consist mainly of vegetable albumin: the first, Mutase, derived mainly from leguminous plants; the second, Aleuronat, which is quite insoluble in water, is the cheapest albumin preparation, and is derived from the part of the wheat which remains as a by-product in the manufacture of starch. It contains 80 per cent. of albumin, with some starch and cellulose. These are both often well borne, and do not irritate the alimentary canal.

Probably none of these preparations is so entirely albuminous as Tropon, a mixture of animal and vegetable albumin, which make up 99 per cent. of the substance. It was introduced by Finkler, and has been very carefully worked at by himself and his scholars. From 90 to 95 per cent. of it is absorbed and it does not irritate the stomach or intestine. Some time ago I made extensive observations with it on phthisical patients, and found that they all put on weight while using it, without any other treatment, but I had great difficulty in persuading them to go on with it for any length of time because of its sandy taste. The more intelligent or better circumstanced of them disguised this taste by taking the substance in cocoa, baking it in scones, or mixing it with porridge, but this difficulty is a very real one with all these artificial preparations. They almost all have a peculiar taste of which patients soon tire, even though it is not actually unpleasant, and it requires some one with a certain

amount of invention to suggest new ways of taking the preparation in order to persuade them to continue its use.

We are perhaps too apt to consider that in giving a patient albumin we are giving him all that is needful, but the amount of albumin necessary is comparatively small, only about 50 to 60 grammes in the day, provided that a sufficient amount of carbohydrate and fat is given in addition. One must bear in mind, moreover, that water should be given in sufficient quantity, as the impoverishment of the body in water leads to serious loss of albumin, and salts are quite as important.

The blood preparations which are recommended for the cure of anæmia because of the "organic" iron which they contain, such as Haemogallol, Haemol, Haematin, etc., act much in the same way as the albumin preparations, and are valueless as iron preparations, or nearly so, in the doses in which they are usually given.

One very important point in connection with all these substances is the effect they have on intestinal putrefaction. It has been roundly asserted in favour of all of them that they caused less than a meat or a milk diet, and Lewin has recently made a series of experiments with Plasmon, Tropon, Nutrose, Somatose, Sanatogen, Aleuronat, and Eulactol in this regard. The measure of putrefaction was taken by quantitative estimation of the ethereal sulphates and volatile acids, and qualitative tests for phenol and indican. The daily dose of each of the substances was 50 grammes in addition to an ordinary invalid diet. Lewin found that no one of these preparations was better than another in this respect, and further that they neither increased nor diminished the normal amount of intestinal putrefaction. 250 grammes of meat added to the diet had practically the same effect as 50 grammes of these substances, so that they should not be given with the view of diminishing that process in the intestine. One of the cases examined was a convalescent from scarlet fever, and it is of interest to note that the use of pure albumin preparations produced no bad effect whatever.

It is unnecessary to describe in detail the numerous children's foods and similar articles. They all contain albumin in considerable amount but their most important constituent is starch, which has either been acted on by diastase or dextrinised. They are practically all well borne and well absorbed.

The only artificial fat preparation is Lipanin, which contains 5 per cent. of free oleic acid which is supposed to facilitate the emulsion and absorption of the fat. It has no advantages, however, over the natural fats and oils of the table.

I have, of course, only been able to mention the more important of the artificial dietetic preparations, and it will be

obvious that not all of these even are of value. Probably the useful ones would be less used were more attention given to the preparation of food both for the healthy and for invalids, and if the public and some of its medical advisers had more knowledge of the necessary and desirable constituents of diet.

Books Received

From Henry Kimpton, London.

ESSENTIALS OF DIAGNOSIS, arranged in the form of Questions and Answers. By Solomon Solis-Cohen, M.D., and Augustus A. Eshner, M.D. Second Edition. Price 6s.

CANCER OF THE UTERUS, also the pathology of Diseases of the Endometrium. By Thomas Stephen Cullen, M.B. (Toronto). Price 31s. 6d.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. By Hobart Amory Hare, M.D., B.Sc. Eighth Edition. Price 21s.

A TEXT-BOOK OF PRACTICAL MEDICINE. By William Gilman Thompson, M.D. Price 21s.

From J. & A. Churchill, London.

A SHORT PRACTICE OF GYNÆCOLOGY. By Henry Jellett, B.A., M.D., etc. Price 7s. 6d.

ULCERATION OF THE BLADDER. By E. Hurry Fenwick, F.R.C.S. Price 5s.

SOUTHALL'S ORGANIC MATERIA MEDICA. Sixth Edition. By John Barclay, B.Sc. (Lond.), F.C.S. Price 7s. 6d.

A MANUAL OF MIDWIFERY. By Alfred Lewis Galabin, M.A., M.D. Fifth Edition. Price 15s.

From H. K. Lewis, London.

HANDBOOK OF DISEASES OF THE EYE, and their treatment. By Henry R. Swanzy, A.M., M.B., F.R.C.S.I. Seventh Edition. Price 12s. 6d.

ILLUSTRATED LECTURES ON NURSING AND HYGIENE. By R. Lawton Roberts, M.D. Lond., D.P.H. (Camb.). Third Edition. Price 2s. 6d.

STUDENT'S MEDICAL DICTIONARY. By George M. Gould, A.M., M.D. Eleventh Edition. Price 14s.

From Smith, Elder & Co., London.

ORTHOPÆDIC SURGERY. A Hand-Book. By Charles Bell Keetley, F.R.C.S. Price 16s.

From The Southern Publishing Company, Ltd., London.

TRANSACTIONS OF THE SIXTH INTERNATIONAL OTOLOGICAL CONGRESS, LONDON. Edited under the direction of the Editorial Committee by E. Cresswell Baber.

From Breitkopf & Härtel, Leipzig.

URETERFISTELU UND URETERVERLETZUNGEN. By Dr W. Stœchel.

NOTICE.

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FORMER OCCUPANTS OF THE CHAIR

Delivered in the M'Ewan Hall at the Opening of the Winter Session, 16th October 1900

By JOHN WYLLIE, M.D., F.R.C.P.Ed., LL.D.,
Professor of Medicine in the University of Edinburgh

IN entering formally to-day upon the duties of the Chair of Medicine, I think it is only fitting that I should devote my opening lecture to the memory of the distinguished men who have occupied the Chair in time past. It has been the happy fortune of the Medical School of this University to have had its various Chairs occupied from time to time by professors of the greatest eminence and influence, men whose published works have advanced the Science of Medicine, and whose teaching has established the reputation of the University as a great Medical School. In this respect the Chair of Medicine has been second to none of the others. It has had in its succession of former occupants men of great originality and power. One of these, William Cullen, was in his own day the leading physician and the most eminent teacher of medicine in Europe. He is one of the great outstanding figures in the history of medicine.

If in the brief retrospect which I now propose to make I followed a strictly chronological order, I would require to begin with a history of the foundation of the Chair and a notice of its first professor. But I ask your permission to depart from this order. The University still feels deeply the

great loss which it has so recently sustained by the death of the late Professor Sir Thomas Grainger Stewart. It is his memory which appeals to me most strongly when I now enter formally upon the duties of the Chair which, for twenty-four years, he occupied with so much distinction. It is to his memory that I wish respectfully to devote the first part of this retrospect.

Professor Sir Thomas Grainger Stewart was born in Edinburgh in 1837. He graduated as Doctor of Medicine of this University in 1858. After a distinguished career, first as Pathologist and then as Physician to the Royal Infirmary, and as Lecturer in the Extra-Mural School, Dr Stewart was, in the year 1876, appointed Professor of the Practice of Physic, in succession to Professor Laycock. After his appointment high honours continued to be bestowed upon him. In 1882 he was appointed Physician to Her Majesty the Queen in Scotland. In 1890 he was elected President of the Royal College of Physicians of Edinburgh. In 1894 the honour of knighthood was conferred upon him by Her Majesty. In 1898 he fulfilled, with remarkable acceptance and distinction, the duties of President of the British Medical Association. In 1899 he represented this University at the Congress on Tuberculosis held in Berlin, and he delivered on that occasion an address on the subject under discussion which was much valued and admired. This was his last public effort.

I shall not attempt to make any detailed estimate of the value of Professor Sir Thomas Grainger Stewart's work as an investigator and teacher, but I may recall to your recollection the fact that the numerous papers contributed by him to Medical Literature were always welcomed and widely read by the profession. It is everywhere agreed that some of his investigations, such as those in Bright's Disease and Functional Albuminuria, and those in Spastic Paralysis and Peripheral Neuritis, display remarkable powers of observation and original thought. There can be no doubt that these and his other published writings will keep his name in remembrance as that of an original observer, whose clinical and pathological researches have done not a little to advance the science of medicine.

It was, however, as a teacher that Professor Stewart was

most of all distinguished. Possessed of a full and accurate knowledge of his subject, he had the power of communicating his knowledge to others in a manner at once impressive and interesting. His gift of easy and eloquent speech, and the wealth of illustration and anecdote with which he adorned his lectures, are well remembered by many here present. He was excellent also as a clinical teacher. In the work of the wards he continued, and improved upon, the methods of clinical teaching and case-taking which had been introduced into this school by the late Professor Hughes Bennett, under whom, at an early period of his professional life he had been a resident physician. His success as a clinical teacher was indeed remarkable, his wards year after year being crowded by the students who sought clinical instruction under him.

We all remember Professor Stewart's fine presence, his kindly manner, and the grace and effect with which, on important occasions, he could act as an orator, or as the chairman of a meeting. His gift of speech, which was always excellent, seemed to improve as he grew older, and in his later years it was much remarked upon and appreciated. Perhaps the progressive improvement of this gift was due to the Professor's cultivation of general literature. He read much in history and other subjects, and from time to time he made contributions to general literature which display literary gifts and accomplishments and a graceful literary style.

From the beginning to the end of his career as a physician and clinical teacher, Professor Stewart was deeply interested in the progress and welfare of his students ; and the students, on their part, were not slow to reward him with their gratitude and affection. Altogether, whilst health remained to him, the Professor must have had much happiness in life. He was happy in his family, and in the affection of many devoted friends. He took great pleasure and interest in his daily work as physician and teacher of medicine. Departing in the fulness of his powers, before age had dimmed his faculties, he has left to the profession works which will be a monument to him, and a name and memory which are worthy to he ranked with those of his distinguished predecessors in the Chair of Medicine. His loss has been deeply felt by the profession and the general public as well as by the University.

The predecessors of Professor Sir Thomas Grainger Stewart in the Chair of Medicine were seven in number. Their names are: John Rutherford, John Gregory, William Cullen, James Gregory, James Home, William Pultney Alison, and Thomas Laycock.

John Rutherford, the first professor, was the son of the minister of Yarrow in Selkirkshire, and was born in 1695. After studying mathematics and natural philosophy at the Edinburgh University, he went to London, where he attended the hospitals, and studied anatomy, surgery and materia medica. He then went abroad, and studied successively at Leyden, Paris, and Rheims; being, when at Leyden, a pupil of the celebrated Boerhaave. He received his degree of Doctor of Medicine from Rheims in 1719. In 1721 he settled as a physician in Edinburgh. Soon after coming to this city he became associated with Monro *primus*, and a few other distinguished men, in the work of founding the Medical School of this University. To Dr Rutherford was assigned the Chair of the Practice of Physic. He held the Chair for forty years, resigning it in 1765, when, at the age of seventy, he retired from professional work. He died in 1779, at the age of eighty-four.

Dr Rutherford always lectured in Latin, of which language he is said to have had a greater command than of his own. He used as a text-book for his class the Latin aphorisms of Boerhaave, his former teacher at Leyden. A very important fact about Dr Rutherford is, that he was not only the first Professor of the Practice of Physic, but also the first to give clinical instruction in the wards of the Royal Infirmary. That great Institution had been finished and opened to the public in 1741. In 1746 Professor Rutherford gave in it his first course of clinical instruction, two wards having been set apart by the managers as clinical wards.

Professor Rutherford seems to have been a man of much natural sagacity. He is said to have been cautious in his practice, and has been described by one of his pupils as "slow but absolutely sure." He commanded the respect and confidence of his patients and his students. He was the father of Dr Daniel Rutherford, Professor of Botany in this University, who is known to fame as the discoverer of nitrogen gas. It is also interesting to note that he was the maternal grandfather

of Sir Walter Scott, his daughter, Anne, being Sir Walter Scott's mother.

The second Professor of the Practice of Physic was Dr John Gregory, who was appointed in 1765, on the retirement of Professor Rutherford. One of the other candidates for the Chair was Dr William Cullen, who had already, for ten years, been Professor of Chemistry in the University, and for eight years teacher of clinical medicine in the Infirmary—Professor Rutherford having given up clinical teaching on account of failing strength. Cullen's great ability as a clinical teacher had made a profound impression. Though unsuccessful in his candidature for the Chair of the Practice of Physic, he continued to teach clinical medicine at the Infirmary; and in the year after Dr Gregory's appointment to the Chair of Practice of Physic, he was appointed Professor of the Institutes of Medicine, Dr Joseph Black being his successor in the Chair of Chemistry. Thus, for three years, John Gregory occupied the Chair of the Practice of Physic, and William Cullen that of the Institutes of Medicine. In 1769, however, four years after Dr Gregory's appointment, a new arrangement was made. In accordance with it, the two Professors, Cullen and Gregory, exchanged Chairs each year, so that each lectured, on alternate years, on the Practice of Physic and the Institutes of Medicine. This curious arrangement held good until the death of Professor Gregory in 1773. Thereafter Cullen ceased to hold the Professorship of the Institutes of Medicine, and became sole Professor of the Practice of Physic. It is difficult to believe that the arrangement referred to can have been a happy one, but, to the end of Dr Gregory's life, the two colleagues seem to have worked harmoniously together.

From his published works and from the accounts of him that have come down to us, it is evident that Dr John Gregory was an accomplished and able man, of gentle manners and disposition. He was a member of a family in which great ability was hereditary for generations. It is one of the families whose history has been tabulated by Galton in illustration of the heredity of genius. From the middle of the seventeenth to the middle of the nineteenth century, at least seventeen Professors have sprung from this remarkable family. John Gregory's grandfather, James Gregory, the celebrated mathe-

matician and inventor of the reflecting telescope, was one of the first of the family to attain great eminence.

Though John Gregory seems to have been to some extent overshadowed by his great colleague, Cullen, everything goes to show that he was an able and acceptable teacher. It is said of him that in his lecturing he struck the golden mean between formal delivery and the ease of conversation. The chief published work which he has left is entitled "A Comparative View of the State and Faculties of Man, with those of the Animal World." This work was published in 1764, when its author was Professor of the Practice of Physic in the University of Aberdeen. Professor Gregory seems to have been a man of delicate and highly nervous constitution, and subject to hereditary gout. He died suddenly during the night in 1773, being then only forty-nine years of age.

On the death of Dr Gregory, William Cullen became the sole occupant of the Chair. He was thus the third Professor appointed to it. I have already stated that for four years he had lectured alternately with Dr Gregory on the Practice of Physic, and on the Institutes of Medicine. He now resigned the Chair of the Institutes of Medicine, and for the future taught only the Practice of Physic and Clinical Medicine.

Cullen's previous experience and training as a teacher, in Glasgow and Edinburgh, had given him a most comprehensive and profound knowledge of medical science. In Glasgow he had taught chemistry, botany, materia medica, and medicine. In Edinburgh, before becoming the sole occupant of the Chair of the Practice of Physic, he had for ten years been Professor of Chemistry, and for seven years one of the Professors of the Institutes of Medicine. It is remarkable that he taught every one of these five subjects with distinguished success. Those who are learned in the History of Chemistry tell us that though Cullen, as a chemist, made no very remarkable discovery, he was the first in Great Britain to elevate chemistry to its proper position of dignity and importance, and to treat of it not as a mere adjunct of practical medicine, but as a subject which had also most important relations to the other sciences and to the useful arts. In the department of materia medica, also, Cullen had done good work. His published lectures on that subject were for many years used as a

text-book in the medical schools. Altogether, it is evident that comprehensiveness was one of the most striking characteristics of Cullen's great intellect. To quote one of his biographers, "He seems to have felt in its full force the observation of Cicero that 'all the sciences are connected, tendering to each other a mutual illustration and assistance.'"

In trying to understand the circumstances in which Cullen found himself when he entered upon the duties of his new Chair, we must bear in mind the theories about the causation of disease which were current in his time.

It would weary you if I were to attempt even an enumeration of the various hypotheses on this subject which were formulated from time to time in the course of medical history. But, as bearing on Cullen's position, I may refer, in a few words, to two leading doctrines which had each come down from ancient times, and which each, in Cullen's day, claimed numerous adherents. One of these was the Humoralistic doctrine, as old as the time of Hippocrates, which attributed all importance in the causation of disease to the fluids of the body. The other was the Solidistic doctrine, which attributed all importance to the solids.

When one examines the history of the Solidistic hypothesis it becomes evident, I think, that what it aimed at expressing was really a recognition of the nervous system as a great factor in the maintenance of health and the causation of disease. This idea is found expressed very dimly by the schools calling themselves "Methodists" and "Pneumatists" which flourished in Rome in the second century of the Christian era. After the revival of learning in Europe it is again found expressed, though still obscurely, by Paracelsus, and a century later by Van Helmont. Then, about the middle of the eighteenth century, it finds a clearer exponent in Hoffman; and, thirty years after Hoffman's time, it becomes clearer still in the teaching of Haller, who is so modern in his manner of treating the subject as to attribute to nerves the property of sensibility and to muscles that of irritability. Thus the solid structures of the nervous system came to be considered by many as of even more importance as factors in the causation of disease than the fluids of the body. Those who held them to be of paramount importance came to be known as Solidists.

The great Boerhaave seems to have recognised that there was truth in both of the rival doctrines, and to have incorporated both in his system.

When Cullen entered upon the duties of the Chair jointly with Professor John Gregory in 1769, the aphorisms of Boerhaave, formulated by their author in imitation of the aphorisms of Hippocrates, continued to be the text-book on medicine which was used in all the schools. At first Cullen used these aphorisms, as his predecessor had done, but gradually he found that his own views, as they developed, departed more and more from the teaching of Boerhaave, and it was accordingly not long before he ceased to use the aphorisms as his text-book. In Cullen's opinion Boerhaave leaned too much towards the Humoralistic doctrine. He himself had been greatly impressed by the importance of the nervous system in health and disease, and leaned decidedly towards the Solidistic views. It is said that when this departure became known the much respected Provost, George Drummond, as representing the Town Council, who were then the sole patrons of the University, called upon Dr Cullen, and begged him not to damage the rising School of Medicine by opposing the views of Boerhaave. But at the interview Cullen succeeded in convincing Provost Drummond that he was right in the course he was taking, and he was subsequently allowed to proceed upon his own lines without further interference.

Cullen became the chief exponent of the views of the Solidists. He gave due consideration to the doctrines of Hoffmann and Haller, and to the able work on functional diseases of the nervous system which had been written by his former colleague Dr Whytt, Professor of the Institutes of Medicine; and when he came to write his own important work on Nosology he included for the first time, in the classification of diseases, the great class of the Neuroses, or functional diseases of the nervous system, a class which from his day down to our own has continued to attract the attention of physicians more and more. In his teaching Cullen termed the structures of the nervous system the vital solids of the body, and the other textures the simple solids. He held that both in health and disease the simple solids were acted upon by the vital solids, and that therefore the causes of disease were to be found

chiefly in connection with functional or structural disturbances in the vital solids—or, as we would now express it, in the nervous system. No doubt he went too far in his support of this Solidistic hypothesis. In his Nosology he has no place for the diseases of the blood. This circumstance has led some of his critics to speak of him as a theorist, who selected only a part of his subject matter, as premises upon which to build up his classification. Buckle, in his interesting chapters on the Scottish intellect during the eighteenth century, compares Cullen with Adam Smith. He says that in dealing with their respective subjects both Cullen and Smith, in their effort to simplify the problems they were considering, put aside, and kept out of consideration, certain sets of facts which ought of right to have been included among the premises upon which they built up their arguments. Adam Smith, in writing his "Wealth of Nations," fixed upon self-interest as the motive power which originates and regulates all commercial undertakings. He intentionally, in this work, leaves out of account the benign influence of human sympathy, which looks to the good of others and restrains the grasping impulses of pure selfishness. But then, as Buckle points out, Adam Smith was, in a way, entitled to make this omission, because he had already written a separate work upon Human Sympathy, viz., his work on the "Theory of the Moral Sentiments." Buckle holds that Cullen also, in treating of the causation and classification of diseases, suppressed important premises which ought to have been included. He built up the whole of his Nosology upon the Solidistic hypothesis, omitting the consideration of the fluids; and, unlike Adam Smith, he wrote no separate work treating of the department which he had omitted from consideration.

This criticism is no doubt just, if exclusive attention is paid to Cullen's work on the Classification of Diseases. There is no place for the fluids there. But the criticism does not represent the whole truth about Cullen's teaching. In his work on the Practice of Physic, in which he is less hide-bound by system, and in which he has to deal in detail with symptoms and treatment, it is evident, in almost every chapter, that his views have been formed to no small extent by observations which he has made for himself. In the course of his clinical

experience, symptoms and phenomena clearly pointing to the existence of derangements of the blood were constantly presenting themselves to his observation, and, in his work on the Practice of Physic, there is no evidence of his shutting his eyes to these phenomena. As we read the book, indeed, we feel that the author was not merely an able thinker and theorist, and a man in every way most learned, but also a shrewdly observant practical physician, who had learned much from direct observation in hospital and private practice. Now and again we come upon thoughts and observations which have a curiously modern ring about them. For example:—In our own times it has come to be the opinion of physicians that the hectic fever and sweating of advanced phthisis must be due to the absorption into the blood of septic toxines from the foci of suppuration in the lungs. It is most interesting to note what Cullen has to say upon this subject. He, of course, knew nothing of septic organisms or their toxines, but he is convinced that a poisonous something, which he calls an "acrimony," has been absorbed into the blood, and that this is the cause of the hectic fever. He says about hectic fever—"I have never seen it in any case where there was not evidence, or where there was not ground to suppose, that there was a permanent purulency or ulceration of some external or internal part. It was for this reason that I concluded it to be a suppurative fever only." This passage shows the clear intellect of Cullen discovering, under great difficulties, the obscure cause of an important symptom, and explaining the nature of the cause, as fully as the science of his day permitted of its explanation. Cullen's strong judgment also displays itself in his attitude towards the therapeutics of his time. In his day, the science of therapeutics was much less advanced than it is in our own time, and it is characteristic of his mind that he saw the futility of many of the methods of treatment then in vogue. Time after time we find him faithfully describing the accepted methods of treatment, and then frankly confessing that he has tried them all and has found them of little or no avail. Would that in our own time physicians had never occasion to make such an admission! The work is full of the author's own observations upon the symptoms of disease and the effects of treatment.

The chief services done by Cullen's work on the classification of disease were firstly, to establish, for the first time, in its proper place of importance, the great class of neuroses or nervous diseases; and, secondly, by its revolt against the Humoralistic hypothesis, to weaken the theoretical basis upon which the disastrous practice of free and almost reckless blood-letting was founded. By his work on the Practice of Physic also, Cullen did much to advance the science of medicine, and to improve the methods of treatment. It must not be supposed, however, that his teaching speedily led to the abandonment of the practice of blood-letting. The practice only died hard, after much controversy, more than half a century after Cullen's time, and within the memory of many of the senior members of the profession who are still with us.

In person, Professor Cullen was tall and spare with a marked stoop about the shoulders—physical characteristics which, curious to say, were also presented by his colleague, Dr John Gregory. His striking features have been preserved to us by his portraits, and also by the caricatures of the time. It is said of him that when he walked he had a contemplative look, and did not seem to regard the objects around him. He always lectured in English, with only a few notes, and he never failed to rivet the attention of his students. To the interests of the students he was most attentive. He put his own private library at their disposal, and helped them in every way in his power. When he was himself a student of medicine at the University, he was one of a few who, in the interest of medical students, founded the Royal Medical Society. For this service many students in after generations have felt that they had good reason to be grateful to him.

Professor Cullen lived to a good old age, and retired from his Chair only a few months before his death. He was a calm philosopher, who, notwithstanding all the hard work he had to do as teacher and physician, seemed never to be in a hurry. He found time to enjoy the society of his friends in Edinburgh, and to take rest occasionally at his country house at Ormiston Hill, near Kirknewton. He died there in the eightieth year of his age. A monument was erected over his tomb in Kirknewton Churchyard by the Royal College of Physicians of Edinburgh; and it may interest you to know that, up to the

present day, the Council of the College, in honour of his memory, visit the tomb officially every second or third year.

The successor of Cullen in the Chair of the Practice of Physic was Dr James Gregory, the son of Dr John Gregory, who had formerly been Professor Cullen's colleague in the Chair. Before his appointment to the Chair of the Practice of Physic, Dr James Gregory had already, for thirteen years, been Professor of the Institutes of Medicine in the University. When holding this position, he had published in Latin a conspectus of theoretical medicine, regarding which the late Sir Robert Christison has said: "It was a model for perspicuity, exactness, completeness for the time, and classical elegance." So pure was its Latinity that it was for a long time a standard work for examination in Latin at the various examining boards of the kingdom. It was also used as a text-book, even in some of the German Universities. Its great success, however, did not tempt its author to write any other important medical work after his appointment to the Chair of the Practice of Physic.

Sir Robert Christison describes James Gregory as the most fascinating lecturer he had ever heard, and as being personally a large man, powerful and handsome, and full of combativeness. He was indeed too combative. During his long tenure of the Chair, he was engaged in many controversies with his professional brethren, and, in connection with these, he wrote numerous pamphlets which are almost volumes in length. Though it is admitted that in these controversies he was generally in the right, it is confessed that, in carrying them on, he was often too acrimonious. He seems to have been a man almost too full of masterful energy. Even in his medical practice the treatment which he employed was often too energetic and masterful. In describing him as a physician Sir Robert Christison says: "He sometimes left us with the impression that we were to be masters over nature. The consequence was that the Gregorian physic, free blood-letting, the cold effusion, brisk purging, frequent blisters, the nauseating action of tartar emetic, came to rule medical practice for many years in all quarters throughout the British Islands and the Colonies." Sir Alexander Grant, after quoting these remarks of Sir Robert Christison's, adds to them the following:—"Gregory's influence has now passed away. Blood-letting of

which he was the apostle has been superseded, but his name still lives as a household word in connection with that milder remedy, 'Gregory's Mixture.'"

James Gregory occupied the Chair from 1790 till his death, at the age of sixty-eight, in the year 1821; a period of thirty-one years. He was admirable as a scholar and as a lecturer, and greatly respected as a man.

At Professor Gregory's death in 1821 he was succeeded in the Chair by Dr James Home. Dr Home had previously, for twenty-three years, been Professor of Materia Medica in the University, and he was sixty-three years of age when appointed to the Chair of the Practice of Physic. It is reported of him that, in the Chair of Materia Medica, his success had been so great that, when he resigned it to take the Chair of the Practice of Physic, he left a class of 310 students. He did not, however, succeed as Professor of the Practice of Physic. He had entered upon the teaching of a new subject at too late a period of life. He held the Chair for eleven years.

Dr Home's successor, and the sixth Professor of the Practice of Physic, was Dr William Pultney Alison. Dr Alison was a nephew of Professor James Gregory, his mother being Professor Gregory's sister, and he was the elder brother of Sir Archibald Alison, the eminent historian. He had already for a period of twenty-one years been Professor of the Institutes of Medicine in the University. He occupied the Chair of the Practice of Physic for a further period of thirteen years. He was a man of fine intellect and very noble character. Those of his former pupils who are still among us speak of him to this day with reverence; and all his students seem to have felt that it was truly a privilege to study under him. I have been told by one of my former teachers, himself a superb lecturer, that Alison could not be described as having been an eloquent speaker; but his weight of character, his earnestness, and his philosophic tone of thought seem to have triumphed over any want of brilliancy in lecturing, so that his teaching always made a deep and lasting impression.

His chief published works are his Outlines of Physiology and Pathology and his Outlines of Pathology and Practice of Medicine. They are characterised by their high philosophic tone and thoughtfulness.

Dr Alison has also a right to be ranked as one of the chief philanthropists of his time. He devoted much of his time and of his means to the poor, and his work entitled "Observations on the Management of the Poor in Scotland" was instrumental in bringing about the much needed amendments in the Poor Law of Scotland which were embodied in the Parliamentary Act of 1845.

Owing to failing health, Professor Alison retired from public teaching in 1855, four years before his death. He was succeeded in the Chair by Dr Thomas Laycock.

Dr Laycock, the seventh Professor, had been educated at University College, London, and subsequently at Paris and Göttingen. He was, at the time of his appointment, a practising physician in York, and Lecturer in the York Medical School on the Practice of Medicine.

Professor Laycock's favourite subject of study was the nervous system, above all the functions and the disorders of the mind in their relation to the physiology and pathology of the brain. He was a man of fertile and inventive mind, and it is now universally acknowledged that not a few of his ideas were in advance of the science of his time. To the majority of his students, destined as they were to be in after life general practitioners of medicine, his course of lectures was not very practical or helpful, but to those who afterwards selected the nervous system as their special subject, his teaching was most valuable. Some of the leading alienists of the present day, and some also who have become eminent specialists in diseases of the nervous system are wont to speak of Professor Laycock as the teacher who helped them most of all in their preparation for their future lifework. It is admitted, however, that Professor Laycock's critical faculties were not always strong enough to curb the exuberance of his imagination. He was apt to revel a little too much in theory. His chief published works are his "Treatise on the Nervous Diseases of Women," and his work entitled "Mind and Brain, or the Correlation of Consciousness and Organisation."

Dr Laycock was a man of marked individuality and independence of character. He always had the courage of his opinions. He died in 1876, in the sixty-fourth year of his age, after having occupied the Chair for twenty-one years.

His successor in the Chair was the late Professor Sir Thomas Grainger Stewart.

I have now finished this brief retrospect, and it only remains for me to thank you all for your attendance on the present occasion, and for the kind welcome you have given me. I feel that it is a very great honour to me that I have been elected to the Chair of Medicine. I feel also that I have taken upon me, in accepting the office, a very great responsibility. The history of the Chair is all too splendid to be studied with perfect comfort by one who now comes for the first time to occupy it. But I trust that the example of the eminent men who have, in the past, been its occupants, will be an inspiration to me, and not, by its very brilliancy, a discouragement. I confess to you that it is to me a matter of great satisfaction that by my appointment to this Chair it is determined that, in future, my life shall be devoted to the teaching of medicine, as it has been in the past; and that my charge of wards at the Royal Infirmary will enable me to work towards the advance of medical science. The welcome which to-day you have so kindly given me encourages me to hope that I may be able to discharge my duties in such a manner as may be to the advantage of my students, and to the satisfaction of my Principal and my colleagues in the University. Principal and colleagues, I thank you for supporting me with your presence upon this occasion; and I thank you all, gentlemen, for the kindly and attentive hearing you have given me.

INTRODUCTORY ADDRESS TO THE CLASS OF SURGERY IN THE UNIVERSITY OF EDINBURGH

OUTLINE OF EXPERIENCES AS A CONSULTING SURGEON WITH THE FORCES IN SOUTH AFRICA

By JOHN CHIENE, F.R.C.S. Ed.,
Professor of Surgery in the University

STUDENTS OF EDINBURGH,

After an absence, even of six months, one is better able to appreciate that longing to be back again in Edinburgh so well expressed by one of her sons—Robert Louis Stevenson. Is it

the persistent irritating *blue* which wearies, or is it the necessity for *gray* which is an essential to the well-being of one who dwells on the shores of the Firth of Forth, or is it a yearning for that want of sameness, that angularity so characteristic of our Edinburgh weather?

So much has happened in these six months. I have seen so much and done so much that it looks more like six years since you said "Good-bye."

When I arrived in South Africa, I found myself *at home* amongst old students of this School. I then understood the power of the Edinburgh School. I then learned its Imperial character, and the strong bond of union that exists between its members.

I was waited on by old students before I landed at Cape Town, and they accorded me a most hearty welcome, and entertained me most royally under the presidency of Dr Scholtz; and on my way home at Durban under Dr Dumat's kindly chairmanship I got a right hearty send-off. They one and all send their kindest regards to their old teachers, and I cannot help thinking that it would be a good thing for a teacher to visit occasionally these great Colonial centres, which form so important a part in our alma mater.

To prevent me thinking that all this kindness had a personal aspect I found an Edinburgh man, in the steamer between Durban and Cape Town, who had forgotten that he had ever been one of my pupils.

Even in St Helena I came across an Edinburgh man—Dr Roe—doing good work in charge of the Boer sick. Everywhere I went I found old pupils, some who had gone out since the war began—some who had settled in the country. All were glad to see me, and those who had been in charge of the Boer ambulances were specially glad.

I have not forgotten—I can never forget—your kindness to me when I left Edinburgh on the 23rd of March, and since my return I have received much kindness from you all. The first day I visited the wards, Nurse Constable, with the help of the students, had done much to render my home-coming a pleasant thing to remember. I thank one and all most heartily.

For thirty years I have given an Introductory Lecture

to a Course on Surgery in this School. The beginning to-day has been an encouragement and a warning. To respond adequately is impossible.

On this occasion I do not intend to discuss many surgical problems which have come under my notice. Neither can I enter upon the wider question of Hospital Administration in South Africa.

I propose to occupy the hour with a short account of my journey, showing you some of the curios which Mr H. M. Stumbles, who accompanied me, was mainly instrumental in securing.

On my arrival at Cape Town I was appointed Consultant in the Cape Town District. My principal work lay at Wynberg, Nos. 1 and 2 General Hospitals; and at Rondesbosch, No. 3 General Hospital. In all I saw both British and Boer wounded. It is hardly necessary to say that no difference was made in their treatment by medical officers, nurses, and orderlies. All were treated alike. Some of the most serious cases were Boers. In many cases much anxiety was felt and several consultations were held over their condition. I always found them most grateful for all that was done for them. Claremont, Woodstock, Greenpoint, Simonstown, and Stellenbosch were also visited.

I was struck by the number of cases of arterio-venous aneurism, by the cases of hœmothorax rarely ending in empyema, by the numerous cases of hernia requiring radical cure, by the fact that the great majority of bullet wounds healed by first intention, and by the fact that bullets passed through the cavities of the body without any apparent damage. One case made an impression on me. A soldier lying on his face was struck by a Mauser bullet. The bullet entered above the left clavicle and passed through the thorax and abdomen and was removed from Scarpa's triangle on the right side. No bad results followed—truly an anatomical problem worthy of Sir William Turner's attention. The bullet wounds at close range were more severe that those at a distance. Possibly the bullet may oscillate for 400 yards and then steady down to pass right through the tissues, soft and *bony*, making a wound in the skin like a leech bite, and with little distinction between the apertures of entrance and exit. I remember in Johannesburg seeing eight patients

lying side by side in whom bullets had passed right through the bones of the leg or foot — all healed by first intention. The shrapnel cases were the worst. Shrapnel and Lyddite were the two fears of the Boers. In the wards no one was *indifferent* as regards his future. Patients were divided into two classes. Those who wished to get back and fight and those who begged to be sent home. The first class were aseptic surgical cases, the second class those who suffered from surgical sepsis and medical cases, especially dysentery. Towards the end of May I began my journey north, and my first halting-place was *Kimberley*—passing through Dielfontein, De Aar, Orange River, and Modder River. I passed Magersfontein with all its sad memories.

In Kimberley, under the kindly guidance of Col. M. D. O'Connell, I found the great majority of patients in convents and halls. Everything seemed to me to be done to make them comfortable. Perhaps there was hardly sufficient air space in some instances. This is not to be wondered at when we consider the fact that all these buildings, with one exception —the Town Hospital—were extemporised for the accommodation of patients.

The majority of the patients suffered from enteric, although there were many wounded, some very seriously. It was in Kimberley that I saw the most severe case of septicoemia that I met with in my travels.

It was in Kimberley that I was first brought face to face with the municipal problem to what extent is it advisable to crowd a town with enteric patients. When subsequently I visited Pretoria, I remember Mr Esselen, formerly Attorney-General to the Transvaal, an old dresser of mine who took to the law, complaining to me of the contamination of that town.

When can these buildings be again used for their original purposes? What form of fumigation and cleansing will be necessary to purify them?

A remark of Sir James Y. Simpson often came to my mind. "Hospitals should be built of wood and burnt every ten years."

I have come back a fire-worshipper. The future of South Africa depends on two things—irrigation of the land and destruction of the dejecta. Possibly they hang together, because

trees require water and trees are necessary for fuel. To do the burning there is coal at Johannesburg and in Natal, but large districts still use wood as fuel.

I say possibly they hang together, but Johannesburg belies the assertion, because round it there are large forests of large trees, planted since 1884, most of them in the nineties.

They told me that a blue gum tree grows ten feet in a year. I can well believe it, although one has to be careful what one believes in South Africa.

But I must push on. On a splendid site outside Kimberley No 11 General Hospital was being erected. I never saw better administrative buildings, operating theatre and staff and nurses' quarters. De Beers supplied the workmen, the wood, and electric fittings, each tent being brilliantly lighted. De Beers also I believe built the railway siding for the Hospital.

I will not forget the last evening I spent in Kimberley, when I got old Edinburgh friends and pupils round me and we talked over old times. I started late at night for Vryburg, and they sang at the station "Auld Lang Syne" to the manifest astonishment of an admiring crowd of Kaffirs.

At Vryburg I reported myself to General Sir Arch. Hunter. I knew no more popular General in South Africa, as a man kindness itself to all with whom he comes in contact.

I went on with him to Doornbult and before he rode off to join his brigade at Lichtenberg he ordered me to push on to Mafeking at the earliest opportunity to help the wounded there. As I travelled back to Vryburg to wait my chance I was fortunate in finding at Devondale Siding, on the top of a truck, an old Edinburgh friend Dr W. H. Steele going north with the X rays apparatus from Kimberley. I left my carriage and mounted on his truck. Through the darkness we pushed on to the Rail head at Maribogo. Next morning we made our way on a Cape cart to Mafeking, passing Kraaipan, Maritsani, and Madibi. We reached Mafeking on the 1st of June. The Medical Relief Column from the South was the name we got in Mafeking.

My impressions of that journey have already appeared in the *Scotsman*. I *now* know that the journey was a risky one. Our salvation was due to the fact that the Relief Column under

General Mahon was marching south to join General Hunter, and the countryside was, for the time being, clear of Boers and rebels. The railway was torn up for miles. The armoured engine was still lying where it had been derailed in October by the Boers. All the bridges were blown up, and it says a great deal for the energy of the Engineers that the line was repaired in a fortnight.

To speak of all I saw and heard at Mafeking would take a lecture itself. We were gladly welcomed and were able to render much assistance. Everyone was glad to see a new face. Even Wessels, the Baralong Chief, seemed glad to see me. My introduction to him as a Scottish Medicine Man perhaps helped me somewhat. The medicine man with them is all powerful.

After spending some days in Mafeking in attendance on the British wounded, and visiting the Boer wounded in prison, and reporting on their condition to Eloff, I joined General Hunter at Lichtenberg. I travelled in an ox waggon, and during the first night we were stopped three times by the Boers.

After seeing several surgical cases amongst our troops General Hunter asked me to visit Commandant Lemmer, who suffered from a severe brain injury. The General took me to his door and would have waited to hear my report unless I had promised to communicate to him at his head-quarters the result of my examination. In Lichtenberg I met Dr Cameron Dunlop, who had charge of a Boer Ambulance, and who has promised, when he comes to Scotland, to give you a lecture on the treatment of injuries from the Boer point of view.

He told me that they had had few enteric cases. I cannot help thinking that the disease, being endemic in the Transvaal, attacks the Boers when children or in early adult life, and that they therefore escape in after years.

Two courses were open to me, either to accompany General Hunter to Johannesburg, or to return to Mafeking and take down the sick and wounded. I chose the latter, and returned to Mafeking. After waiting some days a train under the charge of Dr C. S. Burton of St George's Hospital arrived from the south, and next day the first batch of wounded were conveyed to the Yeomanry Hospital at Dielfontein. After inspecting the Yeo-

manry Hospital—a 1000 bed hospital, with every comfort and every luxury—a hospital which has done most excellent work; much was expected of it, and its position south of De Aar, the great railway junction, enabled it fully to meet those expectations—I passed through De Aar and Naauport to Norval's Pont.

Again amongst my Edinburgh friends, to whom I had said good-bye two months before. I heard for the first time much that deeply affected me. Mr Wallace and Mr Cooper, Staff-Sergeant Darling, Sergeant Hey and others had been seriously ill with enteric; Mr Paulin and several orderlies with dysentery: both diseases in all probability contracted during their encampment on an insanitary site near the railway. This important station, guarding the bridge over the Orange River, has been an encamping ground since October last—first by Boers who invaded the colony, then, on their retreat, they there made a stand. The same ground has been used by thousands of our troops on their way north, and all our *sick* have passed south through this station. The camping ground around Norval's Pont was covered with dried enteric and dysenteric dejecta, and dust storms were driving the poison into every nook and cranny of tents and huts. No wonder that they passed through suffering, but they stuck manfully to their duty, and I never felt prouder of our city and school than when I found everyone at his and her post striving to mitigate and combat the mischief. From the very first every precaution was taken. Sir James Clark and Mr Wallace successfully refused to take the site that had been allotted to the hospital, and chose a healthy position on the slope, half a mile from the station. When I arrived Dr Boyd, the assistant surgeons, nurses, dressers and orderlies had their hands full, and I cannot speak in sufficiently high terms of their fortitude and endurance. During my stay at the Edinburgh Hospital others took ill—Dr Gribben, Nurse Herriot, and several of the orderlies. Not a drop of unboiled water was ever used, and careful inspection of the farms supplying milk was carried out. In my opinion it was not a question of water or milk. It was one of dust and flies. The dust inhaled and swallowed, the flies carrying the poison from the latrines to the food, and infection taking place through the two great absorption areas, the lungs and intestinal canal.

Mr Wallace, who has returned to this country, and who, I am glad to say, is restored to his former vigour, and Dr Boyd will tell you all this and much more when the Hospital Staff returns home. The last home letter which I received tells that they are still very busy. Yesterday the hospital was handed over to the Government, and we may expect the staff in the middle of November. You will give them a hearty welcome.

They have served their Queen and country nobly, and they have ever had before them the outstanding fact that they were citizens of no mean city, that they were bound to uphold the credit of our *alma mater* and Royal Infirmary, as centres of light and leading. They have treated their patients exactly as these patients would have been treated in the Edinburgh Royal Infirmary and City Hospital. Thanks to the ready assistance which the citizens of Edinburgh and the East of Scotland gave to our Lord Provost, every comfort was available and everything that science and kindness could do was done. In their initial difficulties the military staff officers at Norval's Pont and elsewhere gave every assistance in their power.

As regards the estimate of the Edinburgh Hospital in South Africa, I had best quote the words of Major MacMunn, who was sent by Lord Roberts along with Major Reade, R.A.M.C., to inspect the hospitals in South Africa. I heard him give his evidence to the Royal Commission, and in answer to the Chairman he said the Edinburgh Hospital was "simply perfect." I cannot leave the Edinburgh Hospital without a word of sincere sympathy for the friends of Nurse Boyd, who died at her post at Naauwport of dysentery, after a few days' illness. A good nurse, a capable, kind-hearted woman. Her death was a sad blow to the Hospital. Of Wm. Dick, a second class orderly, who has recently been carried off by enteric, Nurse Herriot writes me "a most capable orderly." Dr Boyd writes—"He was one of our best men, doing first class orderly work."

When at Norval's Pont I visited Springfontein. I desired specially to visit the Welsh Hospital, sympathising very deeply with them in the great losses they had sustained amongst their staff. I found them under the able guidance of Col. Keogh, R.A.M.C. They are now in Pretoria.

I entered the Orange River Colony on the 1st July, visiting Bloemfontein, Kroonstadt, Johannesburg and Pretoria. My longest stay was in Johannesburg, because there the surgical work was most important, fighting going on east and west of the town. Much has been said and written about Bloemfontein. I cannot speak of Bloemfontein in April and May, but when I saw it in July everything was very different from the time when enteric was rife and the difficulties of transport were so great. In July, in addition to a large number of cases in buildings in the town, there were two large general hospitals, Nos. 8 and 9, in full working order, and the Portland Hospital alongside No. 8. Each general hospital had 600 patients, but when the pressure was greatest that number was increased to 1500. It was this tremendous and sudden increase of patients which rendered the difficulties of the situation so great. The same difficulties might have occurred in any large town in this country, say, in Edinburgh, had such a large number of patients been suddenly forced upon us; putting aside altogether the difficulties of transport. At Kroonstadt everything was in excellent order. Colonel Oswald Wood, a former student of this school, was in charge of part of No. 3 General Hospital from Rondebosch, and alongside of him the Scottish Red Cross Hospital under Dr Clark, senior surgeon of the Glasgow Royal Infirmary. They were in a good position and doing good work, and Dr Luke, second in command, had just had a successful case of enterectomy. I also heard of another case in Natal. The statistics of operations for intestinal injuries have yet to be recorded.

At Bloemfontein no churches were used, but at Kroonstadt a large church in the square in the centre of the town seemed to me to make a very good hospital. In fact I think churches make excellent hospitals, if the windows are made to extend from the floor to the ceiling. Major Gray, R.A.M.C., B.Sc., Edinburgh, was in charge of the church, and he showed me with some pride the windows broken to admit air, and I think he said he himself had done the work. Colonel Wood hoped soon to get all the patients out of the town and into tents in his General Hospital on the hill side. Enterics do best in tents.

It was here that I saw a very excellent way of diminishing

the necessity for so many orderlies, by joining the tents together side by side. In Natal I found the same procedure, and at Estcourt under Col. M'Neece the tents were joined end to end.

At Roodeval I spent some hours, as the line ahead was blocked. It was a woeful scene of destruction—letters, clothing, ammunition, burnt trucks—ninety bales of socks, 13,000 British warmers, 400 mail bags were destroyed.

I reached Johannesburg early one morning, my money was running done, my letter of credit had never reached me. I hunted for it amongst the letters at Roodeval without avail. Looking about for some place to settle, I fortunately came on an old pupil, Dr Thwaits, who had been in fourteen engagements as surgeon to Kitchener's Horse, and was then civil surgeon in Johannesburg. He took me in and was most kind.

Johannesburg, when I arrived, had no General Hospital, only one Field Hospital, the patients being distributed over the town in the large and splendidly equipped Johannesburg Hospital and in halls and hotels under Major Wilson, R.A.M.C., an old Edinburgh man. Before I left, No. 4 Stationary Hospital from East London had arrived. Some of the staff were seven weeks on the way. Also No. 6 General had commenced to arrive from Naauwpoort, and the tents were being rapidly put up.

I visited Pretoria and spent three days there. The staff of No. 2 General Hospital were waiting for their tents. All the patients were in halls and schools, and it appeared to me that the Irish Hospital, under Sir Wm. Thomson in the Courts of Justice, was doing most excellent work. In fact the share that the civil surgeons have taken in this late crisis in South Africa has been a very important one, and the help that they have been to the Army Medical Department cannot but be looked on with pride by the Empire.

On my return from Pretoria to Johannesburg I was sent by the Surgeon-General to Natal to report to Major Reade and Major M'Munn at Cape Town, where they were to meet the Commission. I could not get down by Laing's Nek, and had to retrace my steps to East London, and sail from there to Durban. In the end of July the line was being constantly cut,

and on one occasion it was cut on both sides of the train in which I travelled. I mention this to show the difficulties with which the transport service had to contend. When we remember that it is 1000 miles from Cape Town to Johannesburg, that the line is a single one, with severe gradients, that the engines were worn out and the rolling stock limited, that the staff officers and railway officials were overworked, and an army of 150,000 men had to be fed and clothed, I think it will be evident that much allowance must be made for any shortcomings.

I travelled with Dr Stewart, C.S., in No. 4 Hospital Train. How comfortable these trains were, and how thoroughly they did their work!

I wish I had more time to dwell on the many comforts of these hospital trains.

Of the seven Hospital Trains in South Africa, three were under the charge of old Edinburgh men.

The soldiers suffered who were sent down in ordinary trains, and in the future some form of portable stove, which can be fitted into a carriage, to heat milk and beef-tea, will, I trust, be supplied. You cannot depend on a sufficiency of proper food at the stopping places, and the poor fellows often reached Cape Town worn and weary.

I arrived at Durban on the 4th of August, and my visits to the hospitals were necessarily hurried, because I had to be at Cape Town on the 18th of August; but all I saw there, in Newcastle, Ladysmith, Estcourt, Mooi River, Maritzburg, and Pinetown, impressed me with the clear level-headedness of the Central Medical Authority.

The task was a simpler one in Natal. The country was loyal, the railway service under David Hunter was uninterrupted, the distance was only 200 to 300 miles, and only 50,000 men had to be fed and clothed instead of 150,000.

If time permitted I could speak of much that I saw in Natal—everywhere Edinburgh men doing their share. Major Kirkpatrick and Captain Kenneth Cameron, Dr Johnstone and Louis Irvine, William Thomson and Andrew Balfour, the latter doubtless collecting ideas for a new novel.

I was struck with the incinerators for dejecta—how much

burning is to be preferred to burying—and with the scientific work done by Dr Watkins Pitchford in Estcourt. He used Vidal's Reaction in diagnosing typhoid. He had no incubator, and incubated his tubes in his pyjamas, using his body heat, overcoming difficulty by simple means. Andrew Balfour told me that Pitchford saved his life by getting from the laboratory at Maritzburg anti-diphtheritic serum. Let me not forget to mention an old Edinburgh friend, Major H. H. Johnston, R.A.M.C., who was making valuable thermometric observations at Mooi River.

I visited the Princess Christian Hospital at Pinetown Bridge. This hospital is very like the Edinburgh Hospital, and I hope that it may long be used as a convalescent hospital for Natal and the Transvaal, and that the Edinburgh Hospital may be the convalescent hospital for Orange River Colony. They are both admirably appointed hut anchor hospitals, but after the war is over they will both be most useful as permanent establishments.

It was with deep regret that on my return to Cape Town I heard of Sir William Stokes' death, more especially as I had seen him in apparently good health in the beginning of August at Durban. In the Ladysmith Cemetery I visited the grave of Dr Robert Irvine, one of Dr Maclaren's former house surgeons, a victim to the scourge of South Africa.

After giving my evidence to the Commission at Cape Town my last official work was to visit the Boer prisoners in St Helena. I was glad to be able to report to Lord Roberts that the sickness had almost entirely passed away, and that the health of the camp was excellent.

During my stay in South Africa I saw the Boer wounded at every large centre, and my last official duty was to visit those who are for the time being kept in St Helena. Our profession fortunately knows no nationality. Anyone, on whatever side he may be, who is ill, receives our help, and I feel fully justified in saying that the same consideration which was given by the medical men on the British side to the Boer wounded was fully reciprocated by the medical men who were in charge of the Boer ambulances. Putting aside foreign ambulances, more than 50 per cent. of those who served as medical men on the Boer side were taught in the

Edinburgh School, and on this fact we may rest with confidence, and assert that the lesson taught them in the Edinburgh Royal Infirmary benefited directly many of our soldiers, who, while they were unfortunate to be sick or wounded and fall into the hands of the Boers, were fortunate in being treated in the main by men who had received their medical education in the Metropolis of the north.

As I entered the Masonic Temple in Johannesberg to see a poor artilleryman who had been brought from Springs that morning (he had been two days in an ambulance waggon) I saw on the tesselated pavement, *Audi vide tace* (Hear look, Be silent). This is my motto to-day.

The Commission is on its way home, and it is said that they may probably hold more meetings in this country. They have full powers and any one who has been in South Africa is liable to be called upon. The whole question is still *sub judice*. Let us take as our motto, *Audi vide tace*.

Everyone who has the medical instinct—sympathy for suffering—will be willing confidently to wait the verdict. Let us be thankful that the individual members of the profession have done their duty, and let us wait with equanimity, knowing that only good can come from a thorough investigation into those charges which have stirred the sympathetic sympathy of the nation.

Looking back on my sojourn in South Africa—and I had time to think on board the transport which brought me home—three things have made a great impression upon me :—

1. The gratitude, bravery, and patience of the soldiers in hospital.
2. That I have never been privileged in the space of six months to give so much happiness to my fellowmen.
3. That at the best war *must be* a miserable business.

My survey has necessarily been a hurried one. I have not even touched upon many of the lessons I have learned. They must gradually leak out in the class-room and the wards.

I trust that leave kindly granted me by the university authorities has been of some little benefit to our poor wounded

soldiers, and that the time spent in South Africa will perhaps bear some fruit which may be useful to me as a teacher and to you as students in this great school.

Mr Stiles took my place, Dr John Stevenson took his during the summer. It goes without saying that the Department did not suffer by my absence. Some might even put it more strongly.

The other day Lord Hopetoun, in bidding his Edinburgh friends good-bye under your genial Presidency, my Lord Provost, and giving a reason why he left his home to serve our Queen as First Governor of a United Australia, used these simple words:—"I shall be ready to serve my country whenever I am called upon to do so. I owe too much to her and the system under which we live ever to refuse to do my share of the country's work."

That, students of Edinburgh, is the reason why our citizens as soldiers, doctors, nurses and orderlies, have volunteered from all parts of the Empire, drawn as by a magnet to South Africa. For everyone who went hundreds were ready in Great and Greater Britain, Australasia, Canada and India to take their place. Let us ever remember the important part that the Loyalists in Cape Colony and Natal took in defending their homes. I cannot help thinking that those who had to stay at home deserve more credit than those who went. They had the weary waiting. Those in the stress and burden of the day had not time to think.

"As his part is that goeth down to the battle, so shall his part be that tarryeth by the stuff. They shall both part alike."

We have all lost friends. We have all suffered. By our suffering this Empire has been welded together and strengthened. Let us endeavour faithfully—trusting not in our own strength—to face manfully the grave responsibilities of our position. Let our aim be to do justice to all men, and let us ever remember that the Brotherhood of Humanity includes all nations and all people, and that this Great Empire is but an atom in the Universe, in which we all are made one for another, in which "Whatsoever is, is but the seed of that which shall be."

"No ordinance of man shall override the settled laws of nature and of God—not written these in pages of a Book—nor were they framed to-day nor yesterday. We know not whence they are; but this we know, that they from all eternity have been and shall to all eternity endure."

ORGANO-THERAPEUTICS, ESPECIALLY IN RELATION TO MENTAL DISEASES

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THE human constitution in health may be regarded as a community of organs working for the common good. The health of any individual organ in the body, as the brain, may broadly speaking be said to depend upon three main factors: firstly, its own intrinsic endowments of vitality, structure and function, proper to the grand life-periods of development, maturity and decadence; secondly, its proper nourishment; and thirdly, its suitable environment. Dismissing the first and the last of these factors, and confining our attention for a little to that of nourishment, we recognise the physiological fact that the immediate nutrition of any organ is of a two-fold nature, hæmic and nervous; in other words, the healthy nourishment of every organ depends upon a proper supply of blood pabulum and of trophic nerve impulses. Again, within the body there probably exists a state of functional and nutritive interdependence amongst the organs, every organ being capable of influencing the nutrition of its neighbours by way of the blood or the nervous system or both. As regards the mechanism of the *nervous nutrition* of the organs within the economy, this may be said to have a triple aspect—efferent, afferent, and reflex.

1. *Efferent nervous nutrition.*—The brain cortex directly dominates the nutrition of the efferent portion of the nervous system, and through it acts as the ultimate controlling power in the nervous nutrition of the bodily organs. It is a matter of everyday observation that from prolonged worry or strain, or some such purely psychical cause, a man's tongue will

become furred and his appetite will fail, he will suffer from indigestion, constipation and palpitation, and will become run down in physical condition. Every student of brain disease knows that when the brain cortex is deranged the bodily nutrition suffers. Every neurologist recognises the still more evident peripheral atrophies in destructive lesions of the motor nuclei of the pons-medulla and spinal cord.

2. *Afferent nervous nutrition.*—It is now well established that in cases of long-standing amputation of the limbs, and even in comparatively recent cases of peripheral nerve paralysis, there occurs a secondary atrophy of the nerve cells in the corresponding segments of the central nervous grey matter. There seems indeed to be little doubt that the skin muscles, viscera, and peripheral parts generally, constantly send, in virtue of the intrinsic molecular changes of vitality within them, anabolic and katabolic impulses to the spinal grey matter, and thence by ever ascending relays to the cortical grey matter, inducing in them similar metabolic changes, and helping to maintain that condition of trophic "tone" of cord and brain, in virtue of which they remain in a state of healthy excitability. Similarly potent impulses reach the brain through the organs of special sense, especially those of sight and hearing, and probably are of considerable value in promoting its nutrition. In short, the whole afferent system of nerve fibres, acting from the body within and from the environment without, constitutes the mechanism for the trophic nervous supply of the cerebro-spinal centres, the mechanism which we take advantage of in our time-honoured methods of treatment of nervous and mental diseases by means of rest, exercise, massage, electricity, pleasant surroundings, picturesque dwellings, artistic decorations, agreeable music, social entertain ments, and even personal suggestion or psychotherapeutics.

3. *Reflex nervous nutrition.*—The enlargement of the mammæ in pregnancy and in diseases of the uterus and ovaries, and the common association of gastric disturbances with mechanical displacements of the kidney, are well known clinical facts, which serve to demonstrate that the condition of one peripheral organ may influence, by way of a reflex nervous mechanism, the nutrition of another distant organ.

As regards the mechanism of the nutrition of the organs by the *blood*, it is obvious that the circulation serves this purpose, and that through the medium of the circulating blood substances formed in any one organ may be carried to and may influence the nutrition of any other organ.

Organo-therapeutics, or the administration in disease of the tissues or extracts of healthy animal organs, is obviously a mode of treatment which attempts to rectify the impaired nutrition and working of organs from the blood side. The practice dates from the classical experiments[1] of Brown-Séquard upon himself with "orchitic fluid" in 1889, and it received a great impetus after the discovery of the thyroid treatment of myxoedema in 1891 by Victor Horsley, G. R. Murray, and others. Brown-Séquard enunciated the doctrine of "internal secretion," and formulated the practice of organo-therapeutics in the following dictum[2]: "All glands and all tissues have an internal secretion; all injected subcutaneously have a tonic effect." According to this formula, any organ may supply to the lymph and blood one or more substances or active principles which are useful or indispensable to the nutrition of the tissues, organs, or body generally. Organo-therapeutics in the insane is based on the assumption that the various organs of the body supply to the blood metabolic products which influence the nutrition of those portions of the brain which subserve mental activity. As regards the influence of the brain upon the bodily nutrition, while this takes place mainly along nervous paths, there is reason to believe that the brain forms metabolic products which pass into the blood and affect the nutrition and functional activity of distant organs. Watt and Halliburton[3] have recently shown that in general paralysis the cerebro-spinal fluid and blood contain the alkaloid choline, which is derived from disintegrating brain substances, and has a toxic depressant effect upon the blood-vessels and heart. As regards the influence of the peripheral organs upon the nutrition and working of the brain, it is often extremely difficult to determine how much of this occurs along nervous lines and how much by way of the blood. This is a problem

[1] *Comptes Rendus de la Société de Biologie*, Paris, 21 June 1889.
[2] *Brit. Med. Journ.*, 1893, i., p. 1145, 1212.
[3] *Proc. Roy. Soc.*, Lond., 20 April 1899.

which the study of organo-therapeutics in the insane may help to solve, and it will suffice to say here that within recent years there has arisen a tendency to regard many forms of insanity as due essentially to auto-intoxication, that is to a poisoning of the brain by metabolic products originating from other organs in the body.

During the past six years I have administered to patients suffering from the various forms of insanity, extracts of the following animal organs:—the thyroid gland, the parathyroid bodies, the thymus, the pituitary body, the brain, the choroid plexuses of the brain, the spleen, the suprarenal bodies, the testes, the ovaries, the uterus, and the mammæ. Of these substances parathyroid extract has not previously been exhibited in the human subject, some of them have not been employed in mental diseases before, two or three of them have been tried more or less extensively in insanity by a few different physicians, and thyroid extract alone has been employed by alienists generally. In the administration of these animal substances amongst the insane, I have kept in view all along two distinct objects: (1) to determine their therapeutic value, and (2) to ascertain their pharmacological actions.

1. In determining the therapeutic value of animal extracts in mental diseases one must specially avoid the following three fallacies: (*a*) of calling a "recovery" what may be only a temporary remission of symptoms; (*b*) of attributing to an extract mental recovery, improvement, or retrogression when these effects are in reality due to the natural course of the disease; and (*c*) of ascribing to an extract benefit which is really attributable to psycho-therapeutics in some form or another, as the beneficial effects of the extra attention and nursing entailed by the treatment of personal influence and suggestion by the physician, and of the patient's belief in the efficacy of the drug used. It will suffice to say here that (*a*) the great majority of my patients were treated in the years 1895 to 1898, and that I am acquainted with their mental histories since; (*b*) I made it an essential point to give the extracts only to patients whose insanity had resisted the approved methods of asylum treatment and had become stationary, or was chronic, or was recognisedly incurable. (*c*) The extracts were administered without any special suggestion of their curative effect, and

not infrequently they had to be given without the knowledge of the patient.

2. In ascertaining the pharmacological actions of animal extracts in the insane, I have as far as possible maintained uniformity as regards the source of each animal extract used, the form of its preparation, and the site of its administration. The *source* of the drug was the sheep in all cases, except the parathyroids, which were more conveniently obtained from the ox. The *form* of preparation employed was the "tabloid" in all cases except the parathyroids, which were dissected and prepared by myself. In the case of thyroid extract other preparations were used in addition to the tabloid. In the case of the testes and ovaries I had previously administered the raw glands to a few ordinary hospital patients, but found that they were more apt to produce nausea and gastric disturbance than the dried extracts of these organs. In all cases fresh tabloids were obtained directly from Messrs Burroughs Wellcome & Co., who inform me that they "are made of the whole substance of the glands or other bodies, dried at a uniform temperature of 100° F., and with the addition of a percentage of sodium chloride, lightly compressed." The *site* of administration in all cases was the stomach, but parathyroid extracts were also injected subcutaneously. It is obvious that the method of stomach administration was by far the most convenient, and it was the mode adopted in all cases, mainly in order to secure as uniform conditions as possible for comparing the actions of the various extracts used. It is open to the objection that the activity of extracts of animal organs may be destroyed by gastro-intestinal digestion, an objection which certainly does not hold good in some cases, and which also in most cases would seem to be overcome by giving relatively large doses. The obvious discomfort and inconvenience to the patient, especially an insane patient, of the hypodermic method repeated twice or thrice daily, sometimes for weeks, and the undoubted difficulty of carrying out this method with all its details of preparation and administration for so prolonged periods with perfect asepsis, were potent objections to its employment, especially where one was desirous of investigating a comprehensive series of the animal extracts, and of avoiding as far as possible any experimental error.

Method of Procedure.—Each patient was weighed, put to bed, and given a fixed mixed diet sufficient to maintain the body-temperature and body-weight at their usual levels. In the course of the first few days, during which the patient's condition was becoming stable under the circumstances of rest and diet, a careful note was made of the state of the bodily and mental functions, including investigations of the pulse, blood, and urine and other excreta. The extract was generally commenced on the fifth day in bed, and during its administration daily observations were made as before. In due course the extract was stopped, observations were continued for a few days afterwards, and finally the patient was weighed and allowed to be up and about and to return to ordinary diet and modes of living. In most cases the patient was weighed weekly during treatment and for a month after its cessation. The observations before, during, and after each administration embraced in every case as far as possible all the systems of the body, and the effects of the extracts upon the metabolism, blood, and pulse were specially investigated. Wherever a quantitative element was present in the observations, as in the daily records of the temperature, the frequency of the pulse, respiration and motions, the daily estimations of the urine, and the counting of the blood corpuscles, an average was taken of the readings before, during, and after each drug administration respectively, the average readings being more likely to represent the facts than the reading on any particular day or days.

For fuller details as to the method of procedure adopted and to various other points, I must refer the reader to my recent article in the *British Medical Journal*.[1] It will suffice here to say that with the patient at rest in bed and on a fixed mixed diet, the clinical investigation of the metabolism was based on observations of the state of the excreta and of the organs of elimination, and on evidence afforded by such factors as the temperature, weight, appetite, digestion and sleep. The observations of the urine embraced quantitative estimations of (1) the daily amount, (2) the total solids, (3) the urea, and (4) the phosphoric acid. The respirations were carefully counted, the "outer respirations," under the conditions of rest

[1] "Organo-Therapeutics in Mental Diseases," *Brit. Med. Journ.*, 22 Sept. 1900.

and diet, and with lungs previously ascertained to be healthy, being taken as a fairly reliable index to the "inner respiration" or tissue oxidation. The action of the skin was carefully observed, for there is little doubt that when the skin perspires freely, its excretion of carbonic acid is increased as Schierbeck has shown, and so is its elimination of urea, a point which I described [1] more fully in this journal a few months ago. The observations as to the action of the bowels were limited to the frequency and naked eye characters of the stools, these giving an approximate idea whether more or less water than usual was being lost by the bowels, for the fæces contain but a trivial quantity of carbonic acid and practically no urea.

The Investigation of the Blood and Pulse included estimations of the hæmoglobin with a Gowers' hæmoglobinometer, and of the corpuscles with a Thoma-Zeiss hæmacytometer, and in some cases film preparations of the blood were made according to Gulland's method,[2] in which the films are first fixed and stained in a mixture of absolute alcohol, ether, corrosive sublimate and eosin (which stains the hæmocytes), and then after washing are counterstained in methylene blue (which stains the leucocytes and blood plates). Tracings of the radial pulse with a Dudgeon sphygmograph were taken in many cases, and observations of the brachial blood-pressure with a Hill and Barnard's sphygmometer were made in a few cases.

Thyroid Extract.

The thyroid gland arises in the embryo much in the same way as a simple gland, and is developed from the pharyngeal hypoblast (the alveolar epithelium) and mesoblast (the stroma). It is relatively largest in the fœtus and infant, possibly because at this period of life growth is relatively more rapid than at any other. The whole life-history of the thyroid indeed seems to point to a special relationship of the gland to phases of metabolic activity in the body generally, or in particular organs. The thyroid may to some extent act as a blood-gland, as was originally suggested by Horsley, but it acts as a blood-former only in

1 "The Excretion of Urea by the Skin in Health," *Scot. Med. and Surg. Journ.*, Feb. 1900.

2 *Brit. Med. Journ.*, 1897, vol. i.

proportion to the amount of lymphoid-tissue which may happen to be distributed along its stroma, as was afterwards pointed out by Lockhart Gibson. The thyroid may, by contraction and dilatation of its rich vascular supply, raise or lower the carotid blood-pressure and so influence the flow of blood through the brain, as has been suggested by Simon, Cyon, and others, but the thyroid can in no sense "blood-let" the brain, for the thyroid vessels form no anastomoses with the vertebrals or the internal carotids. The vascular richness of the thyroid is probably an expression of its important and essential glandular function, this being to serve the body, and especially the connective and nervous tissues, with a positive internal secretion which is necessary for their healthy nutrition (Schiff, Schäfer, and others). Physiological, pharmacological, and therapeutical evidence is entirely in favour of this view of the mode of action of the thyroid within the economy, and does not support the interpretation which Horsley and others have given to their experiments on thyroidectomy in animals, namely, that the gland secures nutrition by destroying more or less hypothetical toxic products of metabolism, which by accumulation would become injurious to the organism.

The solids of the thyroid, or in other words, dried thyroid extracts, consist, with the exception of small quantities of inorganic salts, extractives (organic acids and nuclein bases), and albumin, mainly of nucleo-proteids, and so are rich in nitrogen and phosphorus. Several active principles [1] have been described (*e.g.* Notkin and Bubnow's Thyreo-proteid, Frankel's Thyreo-antitoxin, Dreschel's Thyroid bases, Hutchison's Colloid Powder or Thyrocol), and it is possible that more than one exists, but there is little doubt now that the main active principle of the thyroid is *Iodothyrin* (Roos and Baumann), a non-proteid body containing iodine, occurring, as Hutchison has shown, in the colloid matter, and in the natural state combined more or less with proteid, which is not essential to its action.

The amount of iodothyrin seems to vary considerably in individual glands, a point to be remembered in the preparation of thyroid extracts, and indicating that in order to secure

[1] Halliburton, in Schäfer's "Text-Book of Physiology," 1898, i., p. 89, and Hutchison, *Brit. Med. Journ.*, 1896, i., p. 722, and 1897, i., p. 194.

products of uniform strength, glands of similar size and age (preferably young glands) should be selected.

Total thyroidectomy in animals may or may not be followed by injurious effects, according to the particular species, genus, order or class to which the animal belongs. It seems strange that thyroidectomy should be harmless in the herbivora,[1] as the sheep's gland is the source of medicinal thyroid preparations. However, it may be stated generally that in those animals in which thyroidectomy is injurious, acute "neurotic" effects, often fatal, are likely to occur in young animals; chronic "cretinic" changes are more likely in fully grown animals; and in old animals no serious effects may occur at all. The same generalisation is probably applicable to the human subject, for although total thyroidectomy does not appear to have been performed in children, "neurotic" symptoms have been observed in young adults; "cretinic" changes (the "operative myxoedema" of the Reverdins, who first described the post-operative appearances in 1882) are the rule in adults, but they become less liable to occur after thirty and may not do so at all in advancing years, as Kocher first pointed out. From all this it would appear that the thyroid is absolutely essential to the healthy nutrition of organs that are actively growing and developing, is not so essential to organs in their maturity, and still less so to organs in the period of their decadence.

Disease of the thyroid is a slower and more gradual process than its removal from the economy by surgical extirpation, and possibly this is the reason why in man atrophy or degeneration of the gland is accompanied by cretinic changes both in early life (cretinism) and in adult life (myxoedema). Neurotic symptoms are not produced by such pathological lesions of the gland, but they do occur in exophthalmic goitre, in which disease, however, they arise not from a deficiency of thyroid secretion, but apparently from an excessive or perverted supply of it to the system. Many of the symptoms of exophthalmic goitre closely resemble those of thyroidism produced by feeding with full physiological or toxic doses. Exophthalmic goitre again may be followed by symptoms of myxoedema, thus indicating that the morbidly active gland may become played

[1] Schäfer, "Text-Book of Physiology," cp. *cit.*, p. 940.

out prematurely and deteriorate before its time. Similarly simple goitre may be followed in time by myxoedematous features, and probably it may be inferred that in all goitrous diseases in which the parenchyma of the gland becomes sufficiently destroyed, terminal cretinoid or myxoedematous features may supervene, due to a deficiency of thyroid secretion at a period when it is still of use to the economy.

Administration of Thyroid Extract.

(*a*) In health; (*b*) in diseases generally; (*c*) in mental diseases.

(*a*) *Exhibition of thyroid to a healthy person* produces a loss in weight at the expense of the fat; an increase in the water, urea, phosphates and chlorides of the urine; alimentary glycosuria; acceleration of the pulse, lowering of the blood-pressure, palpitation, and fainting.

(*b*) *In diseases generally.*—Thyroid extract, as is well known, is the specific cure for myxoedema and cretinism, and with the remarkable discovery of the thyroid treatment of myxoedema are to be associated the names of Victor Horsley, who suggested the method of thyroid grafting; G. R. Murray, who introduced the hypodermic mode of administration; and Howitz of Copenhagen, who administered the drug by the stomach. Thyroid extract is beneficial in all forms of thyroid insufficiency, and in all forms of goitre with associated myxoedemic features. It is naturally contra-indicated in pure exophthalmic goitre, and it is not of much use in other forms of goitre except, curiously, in simple parenchymatous goitre, and the reason probably is that this morbid condition of the gland—which is most common at puberty, adolescence and early adult life—is really brought about by an undue demand on the part of the growing and developing system, on the thyroid, which responds excessively to the call, and therefore, as Murray[1] has suggested, the rationale of thyroid feeding in simple goitre is to give the gland a chance to return to its normal condition of moderate activity. It may be that the iodine treatment of goitre may be explained in the same way, although Stockman[2] is of opinion that iodine

[1] *Edinburgh Medical Journal*, August 1900.
[2] Glasgow Hospital Reports, 1899.

directly promotes the renewal of the active colloid matter, and sometimes so rapidly as to produce a form of iodism which is more truly thyroidism.

Thyroid extract has been found beneficial in backward growth or dwarfing, promoting the growth of the skeleton, and for the same reason in ununited fractures; also in rickets, and in acromegaly. It has also been much used for obesity, but to be successful the treatment must be more or less continuous, and therefore not without risk of cardiac embarrassment. Thyroid extract has been used with more or less success in such skin affections as psoriasis, scleroderma, warts, ichthyosis, prurigo, alopecia areata, exfoliative dermatitis, and eczema; also in such diseases as lupus, leprosy, and in hæmophilia. It has been tried in fatty heart, and has been found good for fatty infiltration, but bad for fatty degeneration, but in my experience fatty heart of whatever form is perhaps the strongest contra-indication for the drug. It has been recommended for "fatty diabetes," but not for lean or true diabetes, and thyroid extract is undoubtedly contra-indicated in all wasting diseases. It has been given in renal inadequacy and chronic nephritis in order to promote the excretion of urea, but to my mind although more urea may escape by the kidneys under this treatment, it is really a method of manufacturing more urea for the disabled kidneys to eliminate. Thyroid extract has been found beneficial in amenorrhœa, metrorrhagia, and other functional disorders in the female; in threatened abortion, in puerperal subinvolution of the uterus, in uterine fibroids and carcinoma, and after various pelvic operations. Thyroid has also been given to promote the secretion of milk during the puerperium, and Beatson of Glasgow and Hermann of London consider that prolonged after-treatment with thyroid is essential to the success of the treatment of mammary carcinoma by excision of mammæ and ovaries, although Stanley Boyd maintains that the beneficial effect is due to the oöphorectomy alone, and that the subsequent thyroid treatment is unnecessary. In the male, thyroid has been tried with some success in disease of the prostate. The extract has also been found useful by some observers in tetany, epilepsy, paralysis agitans, progressive muscular atrophy, and other nervous affections. It will thus be seen

that thyroid extract has been tried in many different diseases, and that a certain amount of success has been experienced by most physicians who have published their cases.

(*c*) *In mental diseases.*—In mental diseases thyroid extract was first administered in two cases of myxoedematous insanity by J. Macpherson[1] and by Melville Dunlop,[2] who each obtained a cure, both of myxoedema and the insanity. In 1894 M'Claughray[3] exhibited thyroid in two cases of insanity with goitre, and obtained amelioration of the mental condition; and in 1895 Reinhold[4] in twelve cases of insanity with goitre obtained improvement as regards the goitre only.

In 1893, however, L. C. Bruce and S. R. Macphail[5] found that they could produce a feverish condition in their insane patients by giving thyroid extract in full physiological doses, and hoping to stimulate Nature's occasional method of cure in insanity by an attack of fever, they applied this method of treatment to the insanities generally. Their efforts met with such success as to attract the notice of alienists generally. Bruce[6] in his subsequent papers was inclined to attribute the beneficial effects of thyroid in insanity not only to its general stimulation of nutrition as after fever, but also to a specific excitant action on the brain cortex. Since the original papers of Bruce and Macphail many physicians have published their results of thyroid treatment in insanity. The recoveries vary from 0 to 50 per cent. in the different records, and recently two American physicians, Mabon and Babcock,[7] have given a summary of over a thousand cases collected from the literature and elsewhere, and yielding the following results:—

	Recovered. per cent.	Improved. per cent.	Unimproved. per cent.
I. *Published cases* (from the literature) . .	23·9	29·4	46·6
II. *Unpublished cases* (in American asylums) .	9·8	18·5	71·6
III. *Authors' own cases* .	19·8	26·2	54·0

[1] *Edin. Med. Journ.*, May 1892. [2] *Edin. Med. Journ.*, May 1893.
[3] *Journ. Ment. Science*, Oct. 1894.
[4] *British Medical Journal*, 15th Feb. 1896.
[5] Bruce and Macphail, *Lancet*, 13th October 1894.
[6] Bruce, *Journ. Ment. Science*, Jan. and Oct. 1895, and Edinburgh Hospital Report, 1895 and 1896.
[7] *American Journ. of Insan.*, Oct. 1899.

Collectively the 1032 cases yield 16·8 per cent. recovered, 24·0 per cent. improved, and 59·2 per cent. unimproved.

Notwithstanding these very fair results, alienists on the whole are at the present somewhat disappointed with their experience of thyroid treatment in insanity, and recently J. Shaw[1] has expressed this feeling in somewhat pessimistic terms by saying that "thyroid can hardly, after some years' trial, be said to be reliable (in insanity), except in myxoedematous and cretinoid cases, but it appears to act well in melancholia and stupor."

In reading over the published cases which, we may take it, are more often the good than the poor results, I feel convinced that many of the recoveries reported were not true tests, in the sense that thyroid was employed when there was still a good chance of recovery by the ordinary methods of treatment. To administer thyroid in a hopeful and curable case of insanity of only two or three months' total duration, or when it has been hardly a month under asylum treatment, yields an unduly high percentage of recoveries, gives no indication of the real therapeutic value of thyroid in insanity, will lead to disappointment in intractable cases, and possibly to disparagement of a useful drug.

I have administered thyroid extract in 130 cases of insanity, a larger series than has hitherto been published by one individual. All the patients (85 females and 45 males) were suffering from insanity which, at the time, was stationary or chronic or incurable. The following are my results:—

Pharmacology.

Of the 130 different patients treated, 22 were given thyroid on more than one occasion—namely, 17 patients twice, 3 patients thrice, 1 patient four times, and 1 patient five times. There were thus in all 160 separate administrations of the drug. Of these 120 were with large doses, 10 with moderate doses, 20 with small doses, and 10 with commencing small doses gradually increased to moderate or large.

The *forms* of thyroid extract used were the officinal preparations "liquor thyroidei" and "thyroideum siccum," Hutchison's colloid powder ("thyrocol"), and in the majority of cases

[1] *Medical Annual*, 1900, p. 280.

the "thyroid tabloid." These are all obtained from the sheep, and in my experience all are capable of producing undesirable effects upon heart, stomach, and nervous system—effects which are therefore probably due not to useless products but to the iodothyrin which they contain. As regards their relative activity in the insane, I find that a sheep's gland (which weighs on an average 60 grains) equals 100 minims liq. thyroid = 50 grains thyroid sicc. = 60 grains thyroid tabloid = 20 to 15 grains thyrocol.

I.—Large Doses (120 cases).

In the case of *large doses* (120 cases) the equivalent of a sheep's gland was given daily for a week—*e.g.* four tabloids (= 20 grs.) thrice daily. Sometimes two-thirds of a gland were given daily to begin with: sometimes the daily dose was increased to a gland and a half. The characteristic effects of these large doses of thyroid in my cases were as follows:—

1. *Loss in weight* in all cases, amounting on an average to 6 lbs., and therefore at the rate of nearly 1 lb. per diem during the week of the drug, and followed afterwards by a gain in weight which usually exceeded the previous loss.

2. *Pyrexia* in 85 per cent. of cases, being characteristically subfebrile, that is, a rise of 1° to 2° F. above the previous average temperature.

3. *Increased perspiration* and hyperæmia of the skin followed by desquamation and a healthier appearance.

4. *Diminution of the subcutaneous fat.*

5. A slight degree of *anæmia* affecting especially the hæmoglobin and to a less extent the red corpuscles, and a slight degree of *leucocytosis.*

6. *Nervous pains* and tinglings, tremors, and a feeling of exhaustion.

7. *Mental excitement*, varying from quiet talkativeness and restlessness to noisy and violent behaviour, and even temporary maniacal condition.

8. Acceleration of the *pulse* in all cases, the increase in rate being generally the earliest symptom of reaction to the drug, usually noticeable by the second day, and amounting finally to 30 or 40 beats per minute. In the later stage of the drug,

the pulse became irregular and weaker, and sphygmographic and sphygmometric observations gave distinct evidence of a lowering of the blood-pressure.

9. *Increase of the respiration* in all cases usually by six per minute.

10. Diminution of *appetite*, increase of thirst, and a tendency to a catarrhal dyspepsia of a temporary nature, followed after the drug by return of appetite, which was often much increased.

11. A tendency to increased *menstruation.*

12. *Urine.*—There was an increase of the water (by about a fifth of the previous average quantity), of the total dissolved solids (usually by a fourth), of the urea (also usually by a fourth), and of the phosphoric acid (usually by a third). Uraturia was common, and this as well as the phosphaturia, was possibly in part due to the nucleo-proteid and nuclein contained in the extracts used. Slight transitory albuminuria occurred in 10 per cent. of cases.

II.—Moderate and Small Doses (40 cases).

Moderate doses, equivalent to one-half of a sheep's gland continued daily for two weeks as a rule, but sometimes for a week or a month, were given in ten cases; and in twenty cases small doses were given, equivalent to from one-quarter to one-sixth to one-twelfth of a gland daily, continued for from one to three months. In these cases the physiological effects produced were essentially similar in kind to those produced by large doses, differing usually only in degree. Thus *pyrexia* was absent in about one-third of the cases with moderate doses, and in about one-half of the cases with small doses, and when present it was subfebrile and a poorer and more irregular action than the typically good subfebrile pyrexia with large doses. *Loss in weight* was not constant; when present it was more gradual, steadily progressive, and sometimes considerable. Similar but less marked changes occurred in the *skin.* The *blood* usually exhibited no changes. *Mental excitement* in mild degree was not uncommon. The *pulse* was nearly always increased by about 10 to 20 beats with small and moderate doses respectively, and although it became softer it was not specially weakened. The *respirations* were usually slightly increased. *Dyspeptic* symptoms were rare; four of the patients had car-

cinoma of the lower lip, œsophagus, pylorus, and pancreas respectively, and small doses produced no amelioration except curiously in the pyloric case, in which there occurred a disappearance of the gastric symptoms, an increase in weight, and a continuance of good health for two years, when fatal hæmorrhage supervened. The nature of the case was confirmed *post-mortem*. In a cretinoid idiot of twenty-one who was receiving one tabloid daily, *menstruation* occurred for the first and only time on the twenty-sixth day of treatment. The total solids, urates, urea, and phosphates of the urine were increased, but not so markedly as in the case of large doses.

Conclusions.—The preceding phenomena in my cases indicate that thyroid extract in the insane acts as a powerful metabolic stimulant, that is as a katabolic stimulant, for in man as in all animals, metabolism is characterised by its katabolic phase, or the splitting up and oxidation of the complex tissue substances. The increase in the excreta under the conditions of rest and diet, is so great as to suggest that iodothyrin is a specific stimulant of general cell metabolism. If one might form a rough idea of what happens when one sheep's gland is administered daily for a week to an insane patient, I would say that the daily loss in weight of nearly a pound was made up of about half an ounce of organic and inorganic solids (by the kidneys mainly), two ounces of carbonic acid gas (by the lungs mainly), and the rest in the form of water by the kidneys, skin, and lungs. The incidence of this loss falls mainly upon the obviously diminished fat of the body, and probably because the fats are the most fluctuating of tissue-substances; but the more stable tissue proteids do not escape during thyroidism, for the nitrogenous waste in the urine is much more than can be accounted for by the proteid present in the extracts employed. The early quickening of the pulse, the phosphaturia, and the nervous and mental symptoms during thyroidism, may all point to a special affinity of the drug for the nerve-centres; and I may add that in a rat which I poisoned with thyroid extract, the brain cells showed marked chromatolysis in comparison with those of another healthy rat which was confined under similar conditions, but was killed instantaneously.

Toleration of Thyroid Extract.—Small and moderate doses were tolerated well by all. In the case of large doses the drug

was borne badly by those under twenty years, and much more so by those over sixty, the former showing a special tendency to lose much weight, the latter to exhibit failure of the pulse. Possibly the explanation of this is that in the old the thyroid gland is feebly functional, and the system therefore is not accustomed to much thyroid secretion; whereas in the young, apart from a greater instability of metabolism, the gland is freely active, and the body, therefore, probably already has a good supply of iodothyrin. It is often said that young people are thin because they are growing rapidly. Hertoghe of Antwerp[1] has suggested that both the thinness and the rapid growth are due to an unduly active thyroid. The drug in large doses was also badly borne by patients who were emaciated or tending to lose weight, and even more so by obese patients, especially those in whom there was reason to suspect fatty degeneration of the heart. In all these cases, therefore, the drug when indicated therapeutically in the insane should be given at first in small or moderate doses. The drug was well borne by patients with valvular disease, but in these cases, in addition to rest in bed, alcohol and cardiac tonics were administered as a precautionary measure during treatment. The drug was also well tolerated by patients with tubercular cicatrices, or other evidence of the diathesis, but to no patient with quiescent or active phthisis was thyroid extract given.

(*To be continued.*)

NOTES OF CASES OF FRACTURE ILLUSTRATING THE VALUE OF SILVER WIRE AND STEEL NAILS

By J. CRAWFORD RENTON, M.D.,

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A. B., æt. 47, was admitted to the Western Infirmary with a compound comminuted and oblique fracture of the tibia. Union did not take place, and several of the comminuted portions were removed, the oblique surfaces were rawed, and held in contact by soft silver wire. In two months the

patient was walking about, and is now, two years after the operation, quite well, the wire having given no trouble.

C. D., æt. 34, was admitted with a compound fracture of the tibia in the lower third. The tibia was drilled, and silver wire passed through the broken ends. In eight weeks the bone was quite solid, and the patient has now a useful leg.

A. E., æt. 10, was admitted with a compound oblique septic fracture of the right tibia, with fracture of the upper third of the femur and also its lower third in the left leg. The child had septic absorption, which was evidenced by suppuration in both ankle joints, and delirium to such an extent that it was with difficulty the splints and dressings could be kept applied. The two fractures of the left femur united without any operation, but the right tibia did not unite. It was therefore drilled and held in contact by soft silver wire, the surfaces of the tibia having previously been refreshed by a fine saw. In six weeks the bone had firmly united, and the child is now walking quite well.

E. F., æt. 30, was admitted to the Western Infirmary suffering from a fracture of the humerus. It was oblique and comminuted, and could not be reduced. A skiagraph taken by Dr M'Intosh showed the obliqueness of the fracture, and also the splitting of the humerus downwards towards the joint. Under chloroform an incision was made over the fractured bone, and a considerable portion of the triceps was found between the fractured ends, this was removed, and the parts brought in contact. At the end of six weeks there was no attempt at union, and therefore silver wire was carried through the fragments. In other six weeks the patient was quite well.

Six cases of fractured patella came under treatment. Four of these were treated by reflecting a flap over the patella, clearing out the clot from between the broken surfaces, and bringing these into contact with silver wire according to the method of Lord Lister. The other two were treated by the subcutaneous method of wiring recommended by Professor Barker of University College, London. All the cases did well, and patients had good movement. One advantage of Mr Barker's method is that the patients can be allowed out of bed somewhat earlier.

D. J., æt. 26, was admitted with ununited fracture of the radius. The broken ends were exposed, the surfaces rawed

by means of the electric saw, and retained in contact by soft silver wire. In six weeks the bone was quite solid, and the patient now has a useful arm.

J. B., æt. 35, was admitted suffering from an oblique ununited fracture of the left femur. A long incision was made on the outer side of the thigh, the bone surfaces rawed, and a steel nail passed through the bones. The nail was removed at the end of eight weeks, the bone being found quite firm.

R. C., æt. 28, came under observation with a simple oblique fracture in the lower third of the tibia, and as no union took place in three weeks I advised the patient, who was a joiner, to allow me "to put a nail through the broken portions." This he agreed to on condition that he received the nail to keep after it was removed; this I at once promised, and put a steel nail across the tibia. At the end of three weeks the bone was quite solid and the nail was removed.

O. B., æt. 30, was admitted suffering from compound dislocation of the ankle joint with fracture of the external malleolus obliquely. The dislocation was easily reduced, a steel nail being driven into the external malleolus and fibula to keep the broken surfaces in contact. In three weeks the dressings were changed, the wounds were healed, and the nail was removed. In eight weeks the patient was dismissed with a plaster of Paris case, which was taken off in four weeks, and he has now a useful ankle joint.

Remarks.—The above cases illustrate the value of fixing the broken surfaces of bone, more especially in oblique fractures. Silver wire has long been employed as a means of securing this, but the method by steel nails is of more recent date, and since wound treatment became so much safer they have been used more freely in simple fractures, more especially the oblique variety. Professor Annandale drew attention some years ago to their value, and since his paper was written their use has become much more general. Indeed, wherever an oblique fracture cannot be kept satisfactorily in position, a steel nail will in most cases be found of service.

A CASE OF EXTRA-UTERINE PREGNANCY

By J. NIGEL STARK, M.D., F.F.P.S.G.,
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EXTRA-UTERINE or ectopic pregnancy presents many features of deep interest worthy of the fullest consideration; but, mindful of the exigences of space, one must omit discussion of most of them, and in this paper I desire especially to draw attention to, and urge the importance of, early diagnosis in the condition. But first I shall narrate a typical case which recently I had the opportunity of treating.

Mrs M., thirty-three years of age, was admitted into the Glasgow Samaritan Hospital for Women, on 22nd August 1900. She was profoundly anæmic, the complexion being like yellow wax in colour; her expression was anxious, and the pulse rapid, soft, and feeble. The history of her illness dated from five weeks previously, when, in the midst of apparent good health and without any warning, a severe pain suddenly started in the left and lower side of the abdomen. Poultices were applied, and after several hours the pain gradually subsided in violence. Upon the patient rising from bed she noticed that two or three drops of blood had escaped from the vagina. During the next five weeks similar attacks of excruciating abdominal pain occurred, commencing in the left inguinal region and passing thence to the back, generally continuing for about a quarter of an hour, and being followed by profuse gushes of blood. Between these attacks a steady hæmorrhagic flow went on, dark in colour and mixed with shreds of tissue. The last two attacks of pain before admission to hospital had taken place during the morning and evening of 18th August, that of the evening being followed by four gushes of blood and a large mass of what was supposed to be blood-clot. Upon two occasions there had been vomiting of a clear bitter fluid unmixed with food particles. The patient complained that her condition was gradually increasing in severity as regards both hæmorrhage and pain, and that she was thoroughly exhausted. There were no bladder symptoms. Constipation had been troublesome since the illness had begun, and for the last week defæcation had been accompanied with great pain.

Menstruation began at the age of fourteen, had always been regular, painless, and normal in every respect. There had been leucorrhœa for a few months seven years previously, but not since then.

She had been married eleven years and had had seven children. The first four were born prematurely at the sixth month, the last three were at full term, all living, and the labours were normal and non-instrumental. The last child was born one year and nine months before she entered the hospital, and she had suckled it for nineteen months. During all that time menstruation had been in abeyance and continued so for four weeks afterwards, when, as already described, the five weeks' discharge commenced, though, naturally enough, the patient looked upon it as menstruation. On inspection and percussion of the abdomen nothing abnormal could be detected. Palpation revealed the presence of a "sore spot" in the left inguinal region stretching towards the middle line suprapubically. Per vaginam, the uterus was felt enlarged, lying forward and dextroposed, and painful upon pressure. In the left fornix a well-marked mass apparently connected with the Fallopian tube was found, which by bimanual examination could be mapped out as distinct and separate from the uterus and of a semi-solid consistence.

Such were the physical signs, and upon making further inquiries it was discovered that no subjective symptom of pregnancy, such as sickness, was or had been present, and the patient asserted most positively that she was certain she was not pregnant.

But in spite of the lack of subjective phenomena one could have no doubt as to the right course of procedure, and though for a moment I considered the advisability of curettage and microscopical examination of the scrapings, I quickly decided that the diagnosis was sufficiently certain as to render such a measure unnecessary, besides, under the circumstances of the patient's physical condition, involving dangerous delay. Therefore, without wasting time, I operated on the following day. The abdominal cavity contained much dark coagulated blood which was removed as thoroughly as possible. Adhesions had formed between loops of intestines; they were broken down, and the left Fallopian tube, which was distended to the size of a

small orange, was removed along with the ovary which was twisted round it. Hæmorrhage was fairly free and the abdomen was washed out with a very large quantity of warm saline solution, a glass drainage tube being also inserted. Later on a rectal saline and brandy injection was administered. The tube was removed in forty-eight hours and the patient made an uninterrupted recovery, the highest temperature recorded being only 99·4° F. She went home exactly twenty-eight days after the operation. Microscopical examination of the tube revealed a most perfect picture of tubal gestation, the decidua being most evident and chorionic villi abundant.

Such, in brief, is the history of this case, and while it affords abundant material for discussion, we shall consider chiefly the question of diagnosis, because, to the practitioner, it is the one which is certainly of the greatest importance. Probably from the comparative rarity of extra-uterine pregnancy and the want of subjective phenomena, diagnosis is often not made in a sufficiently early stage after rupture, and one can affirm with certainty that many valuable lives have been lost from this want of early recognition of the condition. While in the stage prior to rupture there are scarcely ever any symptoms which lead to the discovery of the perilous state of the woman, *after* rupture or abortion there are, subject to variation in individual cases, two cardinal symptoms which are characteristic of practically every case, namely, pain and hæmorrhage. Of those the pain is the most typical, although in several well-known text-books no special significance seems to be attached to it by the authors, some not even mentioning its existence. But, as a matter of fact, it is not unusually present before rupture, when I suppose it is, partly at least, caused by the extreme tension in the tube. When rupture or abortion does take place, the pain commences with great suddenness, it may be after some act of straining, but not infrequently without any definite cause. After a varying time it passes away, reappearing, however, in paroxysms so acute and agonising as to produce symptoms of shock—cold sweat, vomiting, syncope and feeble pulse. It is usually referred to one or other groin, extending to the back, down the leg or up to the epigastrium. So severe and alarming are the symptoms that when death occurs it might be suspected that the patient had suffered from internal poisoning, and there

is a well-known instance of this mistake in the case of an English actress who died very suddenly in Paris. The suspicion was so strong that an autopsy was held, when it was revealed that the true cause of death was rupture of a pregnant tube.

The second symptom, hæmorrhage, is of practically universal occurrence, and beginning as it frequently does after amenorrhœa for a few weeks, it might at first be mistaken for the reappearance of menstruation delayed by some constitutional cause, or for a symptom of ordinary uterine abortion. But in typical intraperitoneal rupture of a gravid tube, the severity of the constitutional effects is far greater than can be accounted for by the amount of visible bleeding. There is excessive pallor, fainting, increase in frequency of the pulse rate to the number, it may be, of thirty or forty beats. In a very severe and dangerous case the rate may become more and more rapid, the body colder and colder, and death may ensue in a few hours with all the phenomena associated with unchecked hæmorrhage and shock. In less serious cases, improvement temporarily occurs and the patient rallies, but again and again exacerbations of pain and hæmorrhage may recur, attended with all the characteristic phenomena. The blood is usually dark in colour, steady in flow, contains shreds of membranes, and, as in the case described, gushes of bright red blood occasionally come on during or after the attacks of pain. Before the rupture of a gravid tube there may have been a period of amenorrhœa, but as frequently there has been irregular menstruation or, at least, discharges of blood from the uterus, so that as a guide to the diagnosis of ectopic pregnancy we can place very little reliance upon the possession of what is so typically symptomatic of normal pregnancy — complete suppression of menstruation.

The physical signs discoverable on examination must necessarily vary according to many circumstances. In the rare event of a case being seen before rupture, there is to be found a swelling at one or other side of the uterus, usually painless and movable and occupying the site of a Fallopian tube. After rupture, the examination reveals a definite tumour, sensitive to pressure, immovable and fixed on one side of the pelvis, displacing the uterus laterally and perhaps forward,

semi-solid in consistence, and rather difficult to limit by means of a bimanual examination on account of abdominal and pelvic tenderness. One should be careful to examine with great gentleness, as otherwise either rupture or renewed hæmorrhage may be produced.

Such then are the principal signs and symptoms attendant upon rupture of the gravid tube, more especially when situated in the isthmus or ampulla, and when the hæmorrhage is intra-peritoneal. If the implantation of the ovum has occurred in the uterine extremity of the tube, features differing in kind from those described may be presented, but such cases are comparatively rare and, as a rule, in them pregnancy is much further advanced and its signs and symptoms quite unmistakable before the occurrence of rupture, which is followed by fearfully profuse hæmorrhage and consequent speedy death unless prompt treatment is adopted.

Many are the varieties and forms of extra-uterine pregnancy, depending upon the primary site of implantation of the ovum and the change of position or condition produced by rupture or development. A consideration of these is however of interest chiefly to the surgeon, and it is sufficient to say that almost all cases occur either in the isthmus or ampulla of the tube, and that rupture takes place into the abdominal cavity or within the folds of the broad ligament. What is desired by all who are not operators is the power to make early diagnosis, and I have endeavoured to point out the ways and means at our disposal. It must not be supposed, however, that it is always easy to decide even when all or most of the symptoms mentioned are present, and the most distinguished and experienced gynecologists have owned to mistakes made by them. Cases of strangulated or ruptured ovarian cyst, appendicitis with rupture of the appendix, and, likeliest of all, ruptured or unruptured pyosalpinx accompanied by a normal uterine abortion, may be mistaken for ruptured tubal gestation, but even if the abdomen is opened in such cases it is the proper procedure. When a life is in danger it is utterly unjustifiable to delay until a more or less definite diagnosis can be made as to the nature of some mass in the pelvis. In such cases "il faut donc les opérer le tout tôt possible, et les opérer toujours."

I need add little more regarding the question of treatment,

for it will be recognised that in practically all cases it resolves itself into removal or drainage of the tube or the sac with its contents and the arrest of hæmorrhage. Nature does succeed occasionally in warding off immediate danger, and even sometimes in affording complete recovery either by the expulsion of the ovum as an abortion through the fimbriated extremity of the tube into the peritoneal cavity or into the uterus, or by the death and degeneration of the ovum in the tube, the gradual arrest of bleeding and the ultimate absorption of blood. But the possibility of such a fortunate ending is not warrant for non-interference, as it has been shown that mortality in cases not operated upon is nearly 70 per cent., whilst 80 per cent. of those upon whom operation is performed recover.

Opinions differ regarding the best period for operation, selection of site, treatment of the sac if one is present, and upon other points which are however of interest and importance chiefly to the operating gynæcologist, and need not be discussed meanwhile. But, in conclusion, I would again affirm that the earlier the stage at which a case of tubal pregnancy is treated, the better is the chance for the recovery of the patient, and it is to earlier recognition of the condition that we must look for a lessened mortality.

THE QUESTION OF IMMUNITY AND VACCINATION AGAINST TYPHOID FEVER [1]

By DONALD H. HUTCHISON, M.D., Edinburgh

THE experiments of Pfeiffer, Kolle, Metchnikoff and others, show that these observers were able to establish a state of immunity in animals. That is to say, an animal receiving repeated inoculations of small doses of a particular virus is able ultimately to overcome the ill effects that a large dose would have had, had it been injected in the first instance.

For example if one takes a guinea-pig of about 500 grammes and inoculates it at intervals with about 1/3 of a platinum loopful (a loopful weighing about 2 m. gms.) of a culture of dead typhoid bacilli, one is able after a certain time to inject 1/2, 1, or 2 of an active virulent culture without death of the animal resulting. Whereas if such doses of

[1] From the Royal College of Physicians' Laboratory, Edinburgh.

virulent culture had been given in the first instance, death would almost certainly have resulted within a few hours.

The reason why an immunised animal is thus able to resist the toxic effects which such large doses would have had on a normal animal has been recently explained by Ehrlich.

Professor Wright and Surgeon-Major Semple in an article in the *British Medical Journal*, January 30th, 1897, described a method of vaccination for the human subject which had been suggested to them sometime previously by Mr Haffkine.

Pfeiffer and Kolle have at the suggestion of Professor Wright been performing typhoid vaccinations in exactly similar a method as adopted by him. He, however, primarily obtained the method from Mr Haffkine's article on anticholera inoculations.

Professor Wright points out that in the process of vaccination two objects are aimed at.

Firstly, to produce a certain degree of immunity which shall be somewhat similar to that obtained from an actual attack of the disease; and *secondly*, to produce the degree of immunity without risk to life.

The best method of producing immunity in a person is by injecting organisms or their products, or both, into the system. The method of obtaining the second object may be performed by various methods, but that which concerns us most is that described in the above mentioned article by Professor Wright, namely, the injection of dead bacilli and their products into the system.

The method employed by them for preparing anti-typhoid vaccine is as follows:

To a twenty-four hours culture of typhoid bacilli a certain fixed quantity of bouillon is added. An emulsion having been made, it is drawn up into a number of calibrated pipettes. These are hermetically sealed and subjected to a temperature of 60° C. for five or ten minutes.

To test if the bacilli have been killed by exposing them to this temperature the contents of one tube are allowed to flow over the surface of an agar tube, which is incubated for forty-eight hours.

If we add eight cubic centimetres of bouillon to a typhoid culture, and take eight equally calibrated pipettes, drawing off

an eighth part of the emulsion into each and inject one of these into a subject—that subject is said to have had an injection of 1/8 of a culture. It appeared to me when preparing vaccine tubes for myself that the above method had certain deficiencies which are as follows :—

That we may obtain a far more rapid growth of bacilli in one twenty-four hours than in another, therefore a subject getting an eighth of a culture as an injection would in one case receive far more bacilli than where the growth of the bacilli had been slow.

Anyone working with cultures cannot fail to note how at times abundant and strong growths occur in twenty-four hours while at others they are small and feeble.

Of course we have no method at our disposal of inoculating our agar tubes with always the same number of bacilli, and for this reason alone a more abundant culture may be obtained in one tube than in another. Again, the media that we are using in our tubes may contain a different quality or quantity of bouillon in each tube, therefore the bacilli may have a more suitable medium for their growth in one tube than in another.

Professor Wright gets over these difficulties by using a typhoid culture of such a strength that 1/4 tube of a twenty-four hours culture constitutes a lethal dose for a guinea-pig of 350 to 400 grammes.

The dose that may be employed of these vaccines, for the human subject, may range from 1/20 to 1/4 of a culture.

Taking for granted that a vaccinated subject has a certain degree of immunity conferred upon him are we justified in assuming that this immunity is sufficient to in any way lessen or alter the severity of an attack of enteric fever? We have every reason to make this inference as will be seen by the following experiment which is simply a repetition of that performed by Pfeiffer. If a guinea-pig be carefully inoculated by repeated small doses of dead typhoid bacilli, and shows a marked agglomerating power by the action of some of its serum on live bacilli, it is found to be extremely resistant to the effects that would be produced by an injection of a loopful of an active virulent culture into a non-vaccinated guinea-pig.

I have been able to render guinea-pigs so thoroughly immune against cholera and typhoid that they have been able

to resist entirely the toxic effects of an injection of 1¼ loopfuls of an active virulent culture.

Professor Wright has also shown this to be the case in the human subject. On September 5th, 1896, he inoculated one of his patients, showing a sedimentary reaction of twenty units with 1/6 of a tube of living virulent typhoid bacilli. No evil results followed. I have not considered it justifiable to perform this experiment on myself, but instead, after inoculation, I have taken by the mouth minute doses of one drop of live bacilli in bouillon at intervals.

I will now proceed to relate my own case with the results obtained regarding the production of agglutinins in my blood.

Twice before I received the inoculation I had my blood carefully examined, with the result that no agglomeration of bacilli occurred, and no sedimentation was to be observed.

The inoculation was performed at the Royal College o Physicians' Laboratory on the 8th October.

One-eighth of a culture in bouillon (which had been previously exposed to a temperature of 60°C. for ten minutes) was injected deeply into muscle substance. The seat of the injection was the left flank, a little above the posterior superior iliac spine.

Following on the experiment performed on myself, I next proceeded to vaccinate two guinea-pigs, one against cholera and the other against typhoid.

The sera of neither of the animals, before receiving the injection, showed the reaction against the organisms.

The state of immunity was produced in each case, by following the lines laid down by Professor Pfeiffer.

Twenty-one days after the guinea-pigs had received their first dose of the virus, a very marked sedimentary reaction was to be noticed. The immunity was so great in each case that complete degeneration of the organisms occurred when brought in contact with their respective sera. The sera of these animals therefore showed a double action.

1. An agglomerating—due to the presence of agglutinins.
2. A toxic action—causing the death and degeneration of the organisms, due to the presence of the alexines of Buchner.

It will thus be seen that substances can be produced within the body which have a specific action on those organisms by means of which the immunity has been produced.

TABLE SHOWING DATES OF EXAMINATION OF SERUM AND THE RESULTS OBTAINED.

The methods employed were Dr Muir's modification of Grünbaum's method and the sedimentation method.

Report on Cases in which the agglutinating action of the blood on Eberth's Bacillus Typhosus was tested

I will here give a brief account of the results I have obtained in testing the sera of various patients.

Two hundred and forty-two cases have been examined and I have divided them into three groups, for the sake of convenience, as follows :—

1. One hundred cases which, from the clinical symptoms presented by the patients at the time of the examination of their sera, were certainly enteric fever, or which subsequently proved to be enteric.
2. One hundred and two cases which, from the clinical symptoms presented by the patients, were certainly not enteric.
3. The examination of the sera taken from forty individuals who had at one time suffered from an attack of enteric fever.

SET I.

Cases where the clinical diagnosis of enteric fever was certain at the time of the examination of the blood serum, or where it was subsequently proved that enteric fever had existed.

Number of cases examined .	100
Total number of observations .	194

Methods employed for the examination of the sera—

Dr Muir's method . .	154 times.
M'Taggart's dry blood method .	22 „
Professor Wright's sedimentation method or my own modification of his method . .	18 „
Total . .	194

Dr Muir's method—

Positive results . . .	140
Negative results . . .	14
Total . .	154

M'Taggart's method—

Positive results . . .	17
Negative results . . .	5
Total . .	22

Wright's Sedimentation method—

Positive results . . .	18
Negative results . . .	0
Total . .	18

Out of the 194 *observations made*—

Total No. of positive results .	175
„ „ „ negative „ .	19
Total . .	194

Of these 100 cases diagnosed as enteric fever or proved afterwards to be enteric—

97 gave a positive result during some part of the course of the disease.

3 gave a negative reaction.

The three that gave no reaction were as follows :—

Case No. 9, which only happened to be examined once, by some oversight, and therefore might have given the reaction later on in the course of the disease ; or, on the other hand, might have been one of those cases where on some days a positive result is obtained, while on others a negative.

Case No. 39, which was examined three different times, on the 17th, 21st, and 26th days of the disease. On none of these occasions was a positive result obtained, yet, owing to the clinical symptoms presented, one was justified in making a diagnosis of enteric fever.

Case No. 100.—This is the most interesting one of the whole series, and I have to thank Dr Gibson for his kindness in allowing me to report on it. He has not himself published the case yet, but intends doing so. The diagnosis here was tubercular meningitis, and this was somewhat strengthened by the fact that no reaction could be obtained with the serum, which was tested on four different occasions. The child ultimately died, and on *post-mortem* examination typical typhoid lesions were found in the intestines.

More curiously still, after death the Widal reaction was obtained. I think the reason that no reaction was obtained during life may be explained in the following way. The dose of poison that the child had had introduced into its system was so great, and the vitality of the tissues so much diminished by this injection, that the body was incapable of reacting, so as to be able to produce alexins or agglutinins. It is a harder matter, however, to account for the fact that the positive reaction was obtained in the blood after death.

Of the twenty-two times that M'Taggart's dry blood method was employed it will be noticed that on five of these occasions a negative result was obtained.

This is easily accounted for by the fact that the serum of these five cases had been preserved for three months, and had therefore lost its agglutinative power.

In those cases examined by Dr Muir's method fourteen negative results were obtained.

Eight of the fourteen negative examinations belong to the three negative cases just described.

In another case (No. 27) the examination was negative with a time limit of half an hour, but was positive when a time limit of one and a-half hours was employed.

In cases 33, 86, and 90, where negative results were obtained, the reaction became positive later on in the course of the disease.

Lastly, in Case No. 15, where a negative result was obtained on the 21st and 28th days of disease, a positive result was found on the 14th and 17th days of disease. This case left the hospital shortly after the last examination of the serum was made, and was lost sight of, so it was impossible to ascertain if the reaction returned at some future date.

Having dealt with the results obtained by the various methods employed, one is able to compare the one with the other; and I am of opinion that of the three used they are all equally reliable, but that Dr Muir's method is the most accurate. The only objection I have in using serum obtained from dry blood is that one is apt to have a large amount of debris in the specimen under examination, consisting of broken-down red cells, etc.

Of the 100 cases of enteric fever examined, the reaction was found to be present on the following days of disease:—

TABLE OF THE DAYS OF THE DISEASE ON WHICH THE REACTION WAS OBTAINED.

In 2	cases	on	the	6th	day	of	disease.	In 1	case	on	the 26th day of disease.
„ 4	„	„		7th	„	„		„ 4	„	„	27th „ „
„ 3	„	„		8th	„	„		„ 2	„	„	28th „ „
„ 7	„	„		9th	„	„		„ 1	„	„	29th „ „
„ 3	„	„		10th	„	„		„ 1	„	„	30th „ „
„ 4	„	„		11th	„	„		„ 2	„	„	31st „ „
„ 4	„	„		12th	„	„		„ 2	„	„	34th „ „
„ 6	„	„		13th	„	„		„ 2	„	„	35th „ „
„ 6	„	„		14th	„	„		„ 1	„	„	36th „ „
„ 6	„	„		15th	„	„		„ 2	„	„	38th „ „
„ 5	„	„		16th	„	„		„ 1	„	„	39th „ „
„ 6	„	„		17th	„	„		„ 1	„	„	41st „ „
„ 4	„	„		18th	„	„		„ 1	„	„	42nd „ „
„ 3	„	„		19th	„	„		„ 1	„	„	44th „ „
„ 1	„	„		20th	„	„		„ 1	„	„	45th „ „
„ 1	„	„		21st	„	„		„ 1	„	„	53rd „ „
„ 4	„	„		22nd	„	„		„ 1	„	„	56th „ „
„ 3	„	„		23rd	„	„		„ 1	„	„	65th „ „
„ 1	„	„		24th	„	„		„ 1	„	„	68th „ „
„ 3	„	„		25th	„	„		„ 1	„	„	83rd „ „

SET II.

The results of the examination of the sera of patients suffering from diseases other than enteric fever—

Number of cases examined .	102
Total number of observations .	194

A previous attack of enteric fever was carefully enquired for in each case.

Methods employed for the examination of the sera—

Dr Muir's method . .	131	times
M'Taggart's dry blood method	47	„
Sedimentation method .	16	„
Total . .	194	

Dr Muir's Method—

Positive results . .	19
Negative results . .	112
Total . .	131

M'Taggart's Method—

Positive results . .	5
Negative results . .	42
Total . .	47

Sedimentation Method—	
Positive results . .	0
Negative results . .	16
Total . .	16
Out of the 194 *observations made*—	
Total positive results . .	24
Total negative results . .	170
Total . .	194

Of these 102 cases which were certainly not suffering from enteric fever—

88 gave complete negative results.

14 gave positive results.

Diseases in which the positive results were obtained are as follows :—

1. Delirium tremens and acute rheumatism.
2. Pleurisy.
3. Sarcoma of ovary.
4. Ovarian tumor.
5. Pneumonia.
6. Broncho pneumonia.
7. Acute rheumatism.
8. Psoas abscess.
9. Puerperium (3 cases), and three cases in which the diagnosis was uncertain.

The most striking case where a positive result was obtained, was No. 5. She was a patient admitted into the Royal Maternity Hospital while I was resident there.

I will here give a short account of her case.

Mrs B., aged 27, married, housewife. Admitted for her confinement to the Royal Maternity Hospital, August 16th, 1897, which occurred on August 18th at 2.20 A.M.

She was very anæmic and had been so for three years.

Fourteen months previously she had been delivered of twins.

At the present delivery, the only special fact about the case was that the placenta was adherent and removed artificially. There was a good deal of post partum hæmorrhage.

Douching was continued throughout the puerperium, as the lochia became foul, probably owing to two lacerations on the vulva.

Her serum was tested on the 1st, 2nd, and 4th of September, and on each date a marked reaction was present. I was so astonished at the result that, thinking that I must have introduced some fallacy, I sent a sample of the serum to the College of Physicians' laboratory and the report that was sent to me confirmed my observation that a most marked reaction was present.

I now enquired carefully into the history of the patient for a recent or previous attack of enteric fever but could get nothing.

On examination of the patient—the abdomen was flat, and soft, and she had no pain on palpation. There were no rose spots to be seen. The tongue was clean. The spleen was not enlarged. Diarrhœa was present but that was owing to medicine she had received. The pupils were semi-dilated.

The patient left the hospital on the 8th September, and I never obtained another chance of testing her serum as she suddenly disappeared owing to family matters.

Of course she may have been suffering from an attack of ambulatory typhoid which would account for the reaction being present.

The next cases worth noting are Nos. 1 and 4. They are also two puerperal cases. On examining their sera marked reactions were obtained. On both occasions other cases were examined with the same culture which gave negative results, showing that the culture was pure and in an active condition.

I am at a loss to know how to account for the reactions obtained in these three cases.

At first I thought that pregnancy or lactation might produce the necessary agglutinins, but this cannot be the reason as I have never again obtained the reaction in puerperal cases, although I have tested several which are not recorded in this paper.

Set III.

The results of the examination of the sera of subjects who have, at one time of their life, suffered from an attack of enteric fever.

My object in having gathered together this set of cases was to ascertain how long after the disease the reaction could be obtained.

I had great difficulty in collecting these cases owing to the nomadic tendency of the ordinary hospital patient. For this reason many cases under observation at one time have been lost sight of.

I was very careful to obtain a definite history of enteric in each case.

Many of the cases, put down as having had enteric one year or six months previously, were cases which I had seen at the City Hospital while resident there and which had given a positive reaction during the attack.

In all forty cases were examined, and the following is a table showing how long after the disease a positive result was obtained :—

In	1	case	1	month	after	attack	In	2	cases	13	months after attack
„	2	„	2	„	„	„	„	1	„	15	„ „ „
„	1	„	5	„	„	„	„	1	„	1½	years „ „
„	2	„	6	„	„	„	„	1	„	2	„ „ „
„	3	„	8	„	„	„	„	2	„	3	„ „ „
„	1	„	10	„	„	„	„	1	„	4½	„ „ „
„	2	„	11	„	„	„	„	1	„	7	„ „ „
„	5	„	12	„	„	„					

From the above table it will be seen that I obtained a positive reaction in one case seven years after the attack. I took the precaution of having this blood examined also by another observer so as to be more certain of a true result being obtained.

M. Widal also publishes such a case that came under his notice.

There is one case worthy of notice which gave no reaction thirteen months after the attack, although before this the reaction had been very marked.

Meetings of Societies

Glasgow Medico-Chirurgical Society

THE first meeting of the winter was held on October 5th, when Mr Edington showed a patient illustrating the effects of tendon-lengthening in a case of Volkmann's ischæmic paralysis. This had ensued after a dislocation of both bones of the right fore-

arm in a little girl. The result was that there was coldness and lividity of the hand, and the fingers were contracted in flexion. Dr Edington lengthened the tendons above the annular ligament of the wrist by cutting down the middle of the tendon longitudinally and transversely outwards on one side above and on the other side below, and sliding apart the two ends till they could be brought in contact and sutured. He did not divide the flexor carpi ulnaris or radialis, as they were not implicated, but the flexor sublimis, profundus, palmaris longus, and flexor longus pollicis were all treated. The hand was then put up in the extended position, with an anterior splint. There was some trouble in the after-treatment from partial sloughing of the flap of skin and subsequent adhesion of tendons to the granulating part of the wound, but after tenotomy of the adhesions this was corrected. The result, as shown to the Society, was remarkably good, the patient having excellent use of the hand and fingers.

Dr Edington referred to Mr Littlewood's description of the operation in the *Lancet*, February 3, 1900.

Dr Edington said that long-continued pressure and deprivation of blood to a part was the essence of the condition. Ischæmic paralysis had been found in cases of gangrene from exposure to cold, which caused certain necrobiotic changes in the muscles; also in gangrene from too prolonged use of Esmark's band. The muscles are placed in a condition similar to rigor mortis after such an accident, and subsequent reparative processes make the matter worse.

Dr W. K. Hunter showed a case of pseudo-hypertrophic paralysis. This was an extreme example in a boy aged eight and a half years.

There was no former history of the disease in the family.

Dr Alex. MacLennan showed a new form of handle for mounted half-circle needles, and described its use.

Dr Hinshelwood read a paper on Ocular Headache. Such headaches, he said, comprised 50 per cent. of the cases of chronic headache met with in general practice. He described the varieties of such headaches in position and intensity. An important point was that the pain was brought on by use of the eye. There might be nothing otherwise to direct the attention to the eye. The patients frequently insisted that they had very good sight. It was not the high errors in refraction that were associated with headaches, but the lesser degree, especially astigmatism.

He referred also to muscular asthenopia of the external muscles of the eye, chiefly the internal recti and to ciliary asthenopia.

The treatment was to provide the patient with suitable glasses and to attend to any general condition which might require attention, such as anæmia, debility after long illness, disordered menstruation, and so forth. Prisms might be required to relieve muscular asthenopia of internal recti.

Finally, he urged that in all cases of obstinate headache the eyes be carefully examined.

Dr E. Thompson thought that though weakness of the internal recti was the most common cause of external muscular asthenopia, that weakness of the external recti gave most trouble. A small degree of vertical error also caused much trouble.

Dr Rowan concurred in the remarks of Drs Hinshelwood and Thompson.

Forfarshire Medical Association

A MEETING of this Society was held on Friday, October 5th, at 4 P.M., in the University College, Dundee. Dr Young, Vice-President, in the chair.

The Chairman referred to the loss the Association had sustained in the death of their President, Dr Aymer of Bervie. A man struck down in the prime of life, who had endeared himself to all his patients, and would be mourned by all the countryside. The Chairman moved "that this meeting of the Forfarshire Medical Association desires to record its deep sense of the loss which the Association had sustained in the death of Dr Aymer of Bervie, the President of the Association, and its appreciation of the interest he had taken in the work of the Association," and that an excerpt of the minutes of this meeting be sent to his widow.

Dr Buist seconded this, and drew attention to the fact that, though not resident in the district of the Association, he had become a member, and was rarely absent from their annual meetings.

This was agreed to.

Dr Don then showed a specimen of epithelioma of the penis, and of sarcoma of the tibia. This latter was removed by amputation through the lower third of the femur from a patient aged 30 years. A section of the tumour was shown under the microscope.

Dr Gray showed a cast of hydrocephalus in a boy aged 6½, and also a specimen of malignant stricture of the sigmoid which he had removed by operation. A microscopic section of the tumour was shown, being that of a columnar-celled epithelioma. A cast of the lumen of the bowel from another case of malignant stricture of the sigmoid bowel was also shown.

Dr Pirie then exhibited and explained a bedrest, the object of which was to keep the patient warm while sitting up. This was effected by means of hot pans passed into the framework. He stated it was the invention of a lady in town, and read her description to the Meeting.

Dr Buist gave notes of four cases of abdominal tumours on which he had operated. In all of these more than one lesion existed. In one case he removed a multilocular ovarian cyst and a second tumour, sausage-shaped, which proved to be a dilated appendix. The patient did well. From a second case he removed gall-stones from a distended gall bladder, a cystic ovary, and also sutured the crural canal through which bowel had protruded. In a third case he removed the uterus for retroversion and a mobile tumour the size of a child's head, but this case was still under treatment.

Dr Halley spoke, and Dr Buist replied.

Professor Kynoch gave notes of a case of Henoch's purpura, and made some remarks on this form of purpura. His case was that of a girl aged 8, in whom there was first a stage of lethargy followed in twelve or twenty-four hours by severe abdominal pain and purpuric spots, which then subsided and patient remained well till another attack. This child had six attacks in two months.

Dr M'Vicar said he had attended two similar cases, in one of which the heart was affected, and he wished to know if there was any such affection in Dr Kynoch's case, and thought the condition of the heart might explain the symptoms. Professor Kynoch replied.

Public Health

Ninth Annual Report of the County of Stirling

Dr John C. M'Vail, the able Medical Officer of Health for the county, refers in this report to the important problem of *village scavenging*. He says:—

"In addition to the question of forming Scavenging Districts in populous places where they do not already exist, there is the further question of the system in operation where Special Districts have been formed. The ideal arrangement is a daily refuse removal system. In my annual Report for 1894, I wrote as follows:—

"'In nearly every village in Scotland the air and the soil are polluted by heaps of decomposing filth, collected behind almost every house. These accumulations are often the means of spreading infectious disease, and in many places they cause con-

tamination of the water supply. Nor is it to be doubted that, independently of infectious disease, there is bound to be much injury to the health of children who are in the habit of using as playgrounds the backyards, whose soil and air are specially affected. The removal of these abominations is a matter of first-rate sanitary importance, yet their existence has been almost sanctified by immemorial custom. Seeing that in many towns of considerable size it is still the habit to permit ashpit and privy refuse to accumulate for weeks, to think of a daily removal of filth from country villages may seem almost Utopian—may be looked on as an evidence of sanitary insanity. It may be said that, looking to the very small valuation of many villages, consisting mainly of labourers' cottages, the total additional rating powers conferred on Special Districts by the Act of 1894 can be productive of very little good. It is true that the amount may be small, but if the main requirement of such a village consists in two or three hours' daily work by a scavenger with a barrow, the simple powers conferred by the Act may be of the greatest value. If, in a village of, say, 200 houses, no heed is given to the powers conferred by the Act, then from year's end to year's end there will be about 200 heaps of reeking filth dotted all through the populated area, polluting the atmosphere and the soil and the water, and insensibly, yet surely, causing and maintaining a general deterioration of the health of the inhabitants. On the other hand, in a similar village wise enough to take full advantage of the new Act, there will be a daily removal of all household refuse and filth thrown out during the previous twenty-four hours. The removal will take place before decomposition has had time to occur, and the village will be protected against probably the principal insanitary influence to which it has previously been subjected.

"'The Special Districts should consist mainly of villages. Isolated houses and farm steadings are out of their scope. Often it may be convenient that several adjoining villages should constitute one Scavenging District. Wherever possible, the district should be large enough to occupy the whole time of at least one scavenger. Wherever possible, the best course would be the entire abolition of ashpits and the substitution of movable receptacles. I look forward with much hope to the exercise of the powers conferred by the new Act as likely to have a most beneficial effect on the health of the villages of Scotland.'

Up till now I regret to say that a daily removal system does not exist in any of the Special Districts in Stirlingshire. No doubt the example of burghs in this matter has more or less effect on the practice of the surrounding villages, and in reporting on this question in Dumbartonshire after the passing of the

Act of 1894, I was able to point to two burghs which by that time had taken advantage of the powers that burghs have so long possessed in this matter. In that county there are now eight Special Districts in three of which a daily removal system is in operation. In one of them the total cost is represented by a rate of 5·75d. per £. In another the rate is 5·6d., and in the third it is 2·10d. These rates, of course, are borne half by the owners and half by the occupiers. The difference in the three districts is considerable, and depends on local circumstances, but the area in which the highest rate prevails is a village with a low average rental and a total valuation of about £6400. I am strongly of opinion that the question of daily scavenging of the populous places in Stirlingshire should now be seriously tackled, especially where water and drainage systems are already provided. The importance of drainage in relation to scavenging is that in a very short time after its introduction water-closets begin to be substituted for dry conservancy methods, and daily removal of household refuse becomes much more easily dealt with. Where a daily system is in force there should be no ashpits, but only ashbins, kept under a small covered shed, and of such a size that they can be tilted by two men into the dust cart without the need of a shovel or wheelbarrow. I trust that inquiry by the Committees in charge of the principal Special Districts will show that it is practicable to carry out the work on the lines here indicated."

Dr M'Vail deals with another subject of some interest, namely, the *housing of potato diggers*. He says:—

"The occurrence in 1897 of a case of enteric fever in a gang of potato diggers in Stirlingshire, and the very defective accommodation which I found provided for them there, led me to enter on an inquiry as to the provision usually made for such gangs in the Counties of Stirling and Dumbarton. The facts thus ascertained in 1897 and 1898 are recorded in my annual Reports for these years. In 1899 the inquiry, though not thoroughly systematic or complete, has been continued as other work permitted. In July I supplied the Sanitary Inspectors in the five districts of the two Counties with printed circulars to be addressed to farmers in the districts asking them to send intimation if and when they were about to have potato diggers working on the farms. Several hundreds of these circulars were issued, and a large number of replies received, many of them being to the effect that no potato diggers were to be employed. The replies resulted in the inspection and report on the accommodation provided in connection with 57 farms in the two Counties.

"In 1897 and 1898 the inquiry was confined to West Stirlingshire and Eastern Dumbartonshire, and was more extensive in

the former than in the latter District. This year's inspection shows that in these two Districts there has been, as a result of the previous visitations, a considerable improvement in the accommodation provided for the diggers. More attention is given to separation of the sexes, and, on the whole, the cleanliness and general comfort of the premises have been better attended to. I have no doubt that continuance of inspection will have the same result in the other Districts. In the detailed notes which follow I make no mention of water supply, as in almost every case the farm supply is in use, and can, where necessary, be dealt with independently of potato digging. The same remark applies to the sanitary conveniences. As stated previously, a high standard of housing cannot be asked or expected for a class of labourers who are occupied only for a short time in connection with each steading. It will be seen from the notes that the great bulk of the diggers are lodged in barns, byres, granaries, and other outhouses. The bedding almost invariably consists of straw laid on the floors, the diggers bringing with them their own bed-coverings. If such outhouses are sufficiently large, and are reasonably well lit and ventilated, and are well cleaned out before the potato diggers come, if the straw for bedding is clean and ample, and if separate accommodation is provided for the two sexes, no intervention by the Local Authority is required so far as concerns sleeping accommodation.

"In no less than 17 of the 57 farms there was no accommodation for separation of the sexes, and in at least 3 where such accommodation existed it was not used by the diggers. This last fact, however, is not to be interpreted too harshly. Sometimes gangs contain male and female members of the same family, who choose to occupy the same apartment. Taking the comparatively low standard of 350 cubic feet per person, there was overcrowding of the diggers at about 20 of the 57 farms, though in 6 of the 20 the overcrowding was confined to only one of two or three apartments used by the diggers. About 20 of the places provided were in a dirty condition, and about 12 were badly lit and ventilated.

"It is essential that there should be satisfactory provision for the cooking of food and the drying of clothes. In some cases there is still cause for complaint here. A fire built on the ground in the open courtyard is quite insufficient for the purpose. The fire should certainly be placed in a building with a roof over it, so that the diggers may have some protection from the wet. It will be seen from the following notes that in many cases the fires have been placed in cart-sheds, but where these are open at one end to the prevailing winds they cannot be regarded as comfortable. The gangs engaged at some farms

are sent to lodge at adjoining villages. If the village houses have been standing empty, the whole premises—walls, floor, and ceiling—may be damp through defective structure or want of repair, and in arranging for such accommodation farmers should have regard to these conditions. As the whole question is comparatively a new one, and has indeed been only now for the first time brought before some of the farmers, I have in the notes on the recent inspections refrained from giving any indication of names and localities."

Ninth Annual Report of the County of Dumbarton

IN this Report Dr M'Vail gives a full and interesting report on an epidemic of scarlet fever. While he administers his district not only with skill but with the tact which is so inestimable a possession for a medical officer, he is always strong and clear; the following represents his views on scavenging:—

"With regard to the scavenging of populous places everywhere, the aim should be to get rid entirely of the utterly abominable privy-midden system which, even in the present day, disgraces so many towns. The accumulation for weeks or months of heaps of rotting filth in the back premises of dwelling-houses is a constant menace to the health of such communities, and is utterly repellant alike to sight and smell. Movable dustbins should be substituted for middens, and water-closets should, wherever possible, take the place of privies. It is not a good argument against the use of water-closets that they may involve the adoption of measures to prevent the pollution of rivers. It is unsound policy to permit one nuisance to be perpetuated in order that another nuisance may not become so flagrant as to require remedial interference. Rivers purification must be dealt with on its own merits, but a polluted stream whose water is not used for primary purposes is likely to be much less dangerous to the public health than the continuance of the privy-midden system in the towns on its banks. Moreover, the difficulties in the way of a very frequent refuse collection are distinctly lessened where a water-closet system prevails. The emptying of dustbins is much easier and less disgusting work than the emptying of privies or privy pails. Of course there are practical difficulties to be overcome in every system, and the man who explains that he has lived for fifty years close beside a dung pit without ever having had a day's illness is always in evidence, but the time when it was necessary to prove that filth is injurious to health has passed, and there should be no question in the minds of Local Authori-

ties as to the importance of preventing such accumulations within the populous communities for whose health they are responsible. Indeed, the only good reason that I know of to the contrary is the financial one, for there is no doubt that the rating limit under the Local Government Act of 1894 is sometimes a serious hindrance to sanitary progress in this direction."

Hospital, &c., Reports

Dunfermline Cottage Hospital, Fifth Annual Report

IN this report the managers say: "The year has been an eventful one. On January 14th, a fire occurred, the effect of which proved to be of serious consequence to the building and property of the hospital. The Moray Wing had just been completed, and the whole of the hospital painted and put into excellent condition when the fire took place. It was found that a great deal of damage had been done both to the building and furniture. Fortunately, none of the patients suffered, although most of them had to be removed for a time. The help rendered on the day of the fire, and the prompt pecuniary assistance afterwards received by the managers, showed how much the hospital has become a public institution in Dunfermline. A sum of about one hundred pounds subscribed by the public was handed to the managers, and this, with the sum received from the Insurance Co., will be sufficient to put all in perfect order again.

"Although the fire caused considerable inconvenience to the work of the hospital for some months, accommodation was afforded to a large number of patients. No less than 323 have been under treatment during the year, and the daily average number of beds occupied has been 27·3. The cost of maintenance has been £1227, 16s. 1d., or about £45 per bed. The average of cost is thus lower than last year's, and will, the managers believe, compare favourably with the rate of expenditure in any hospital in the country.

"The Röntgen Rays apparatus, presented by Mrs Carnegie, has proved of great assistance and value to the medical staff.

"The appeal made to the public last year for an increased income to meet the extra cost of the enlarged hospital has been most liberally responded to, and the managers are confident, from the interest so manifestly shown during the year, that there will not be any lack of funds so long as the work is successfully and satisfactorily carried on.

"The managers gladly refer to one gratifying feature, show-

ing how much the patients appreciate the hospital—viz., that a sum of £148, 9s. has been voluntarily contributed by those who have been under treatment during the year.

"During the past year one of the medical gentlemen delivered to the nursing staff a course of lectures on hospital work, which was followed by a careful examination, in which Nurse Hastings secured the prize.

"The staff now consists of the matron, five nurses, and four domestic servants.

"More than ever are the members of the honorary medical staff deserving of the best thanks of the public for their untiring labours. Only those closely associated with the hospital can form any idea of what these gentlemen do. They respond promptly night or day to all calls made upon them, and those needing their attention in the hospital are visited and attended to with the same care and solicitude as if they were private patients. Nothing is more gratifying to the managers than the hearty and harmonious way in which all the medical staff work together for the common good of those who require medical or surgical treatment."

We note from the report sent to us the following points: that the medical staff is large and embraces all or nearly all the local practitioners; that admission is by letter of recommendation from a subscriber, countersigned by a medical man; and that each ordinary patient is expected to pay to the funds of the hospital a sum of 3s. 6d. for each week during which he or she shall remain an inmate of the hospital; but that this charge may be modified or dispensed with, in the option of the managers.

Of the excellence of the medical and surgical work done in the hospital a perusal of the table of cases treated is sufficient evidence. The operations include oophorectomies, laparotomies, nephroraphy, ovariotomies, cholecystotomies, etc., showing that the most forward operations are performed by the staff, and performed successfully.

The number of patients treated during the year was 323: of these 30 died, and of that number 13 died within 48 hours after admission. The staff and the managers are to be congratulated.

Editorial Notes and News

Royal College of Surgeons, Edinburgh

THE following gentlemen having passed the requisite examinations, were, at a meeting of the College held on 17th inst., elected Fellows of the College:—Percival Clennell Fenwick, M.R.C.S.

Eng., L.R.C.P. Lond., New Zealand; Thomas Anstey-Chave, M.R.C.S. Eng., L.R.C.P. Lond., Hereford; Edward Edelston Brierley, M.B., C.M., Rochdale; Leonard Lamming Burton, M.R.C.S. Eng., L.R.C.P. Lond., Scarborough; Herbert Davis Coles, M.D., Bournemouth; Alexander Henry Croucher, M.D., Estbourne; William Henry Dawson, M.B., C.M., Edinburgh; Alexander Don, M.B., C.M., Dundee; George Kerr Grimmer, M.B., C.M., Edinburgh; John Leo Walton Kitching, M.R.C.S. Eng., L.R.C.P. Lond., Cobham; William Duncan Lawrie, M.B., C.M., Birmingham; Harry George Melville, M.B., C.M., India; John M'Naughton, M.B., C.M., Edinburgh; Frederick Thomas Travers, M.R.C.S. Eng., L.R.C.P. Lond., London, W.

New Books and New Editions

Lectures on Clinical Medicine, delivered in the Glasgow Royal Infirmary. By JOHN LINDSAY STEVEN, M.D., Physician to the Infirmary, Lecturer on the Practice of Medicine, Queen Margaret College, University of Glasgow, etc. 8vo, pp. 195, 37 illustrations. Glasgow: Alex. Macdougall, 1900. Price 6s.

THESE lectures have already appeared in various periodicals, but one is glad to see them in the present form, as they give evidence of a great deal of thorough work, and include descriptions of some rare forms of disease. Among these are cases of Landry's paralysis, of osteo-arthropathy, of scleroderma, and of congenital obliteration of the bile-ducts. Two cases of mediastinal tumour are described, a subject in connection with which Dr Steven's name is already favourably known, and a large number of rare and obscure nervous conditions are considered. There is a very temperate and fair-minded discussion of the Nauheim methods of treatment as applied to cases of rheumatic valvular disease of the heart, in regard to which the author's opinion is not a favourable one, and a collation of the cases of pleural effusion which Dr Steven has treated by the operation of paracentesis. We are interested to find that he does not consider that effusion of cardiac origin is properly treated by paracentesis; our experience in Edinburgh points rather in the contrary direction.

These examples will suffice to show that the volume covers a large field of work, and the work has been very carefully and accurately done. The illustrations, which are all original, are good and well-chosen, and the volume will be to Dr Steven's students a pleasant and useful memento, and will enhance the reputation of its author.

The Medical Annual and Practitioners' Index, 1900. Eighteenth year. 8vo, pp. 870, many illustrations. Bristol: John Wright & Co. Price 7s. 6d. net.

ONE always welcomes the yearly issue of this book of reference, for its distinctly practical tendency makes it very useful. There are the usual number of routine abstracts on all sorts of subjects, in regard to which, by the way, one could sometimes wish that the literature which is summarised were a little more recent in date. Of course for the sake of fulness it is often desirable to go back a year or two, but we fancy that probably three-fourths or more of the papers quoted were published in 1898. But the special feature of the work is the publication of concise articles by experts on subjects which are prominently before the profession. Thus we have here an article by Major Ross on Malaria, another, beautifully illustrated, by Colonel Keith Hatch on Mycetoma, and others on all sorts of subjects which required to be brought up to date. The publishers are very much to be congratulated on keeping the book so thoroughly in line with all that is new and important.

The American Year-book of Medicine and Surgery. By Fifteen Contributors under the general editorial charge of GEORGE M. GOULD, M.D. Medicine. Large 8vo, pp. 656, 9 plates. London: Rebman, Ltd. 1900.

THE medical and surgical parts of this useful publication are henceforward to appear separately, which gives us two handy volumes in place of one unwieldy one. There are several changes in the sub-editing staff, but these have all apparently been in the direction of greater efficiency, and it would be difficult to imagine that the work could be better done than it is in the volume before us. The contributors are all men of eminence in their special subjects, and as the plan of the work involves critical comments on the papers which are summarised, it is well that the commentators are men who can speak with authority. It is perhaps invidious to select special sections for mention, but one cannot refrain from admiring the prodigious industry shown by Drs Stengel and Edsall in the section of General Medicine, which occupies more than a third of the whole volume. The section on Pediatrics, by Drs Louis Starr and Hand, is also very full, and contains much of interest, in particular very good digests of many important papers on infant-feeding. One is glad to see an old Edinburgh friend, Professor G. N. Stewart, in charge of the section on Physiology, while the names of Wyatt Johnston and Abbott are a sufficient guarantee

that the chapters on Legal Medicine and Hygiene are carefully written and thoroughly up-to-date. Two of the plates call for special remark. One is a coloured drawing of Koplik's spots, the pathognomonic prodrome of measles, and of the conditions which might be mistaken for them; the other a copy of Haag's graphic schedule showing the percentage loss of earning power to a workman through permanent partial disability from accident or disease. This should be distinctly useful to men who have to deal with cases of accident under the Employers' Liability Acts.

The volume is a very useful compendium, and should be in the hands of every practitioner who desires to keep his knowledge abreast of the latest researches.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

NEUROLOGY

By ASHLEY W. MACKINTOSH, M.D.,
Assistant Physician, Royal Infirmary, Aberdeen

Location of Sensory Centres.—There is still great uncertainty as to the location of the *sensory* centres in the cerebral cortex. The well-known experiments of Ferrier on the hippocampal region, and of Horsley and Schäfer on the gyrus fornicatus, have established the fact that profound impairment of sensation may be experimentally produced by cortical lesions of the falciform lobe without motor paralysis, and the deduction drawn therefrom is that this part of the brain is at least included in the sensory zone of the cerebral cortex. Very little clinical evidence can be adduced in favour of this view, as there are on record so few cases of lesions restricted to the falciform lobe. Much evidence, experimental and clinico-pathological, has been brought forward in favour of, and against the view that the sensory centres coincide in whole or in part with the motor centres in the Rolandic region. There can be no doubt that in many (but by no means all) cases of lesion of the motor area of the cortex impairment of sensation has been observed. Some writers look on the anæsthesia in these cases as a proof that sensation is represented in the motor centres, while others hold that it is an indirect and transitory symptom ("dynamical") or due to simultaneous implication of the sensory tracts. By some writers, again, the parietal lobe is believed to be the site of sensory

centres, and more especially the centre for the sense of position (muscular sense). A most interesting and instructive case, bearing upon this important and vexed question as to the localisation of the sensory centres in the cortex, is recorded by Mills and Keen (*Journal of Nervous and Mental Disease*, May 1900, p. 244). The patient was a man, age fifty-seven. In 1894 he began to suffer from sudden, momentary attacks of paræsthesia of the right arm; he became neurasthenic and hysterical, and suffered from a feeling of pressure or weight in the head (exceptionally true localised headache), usually referred to the left parieto-frontal region. No further symptoms appeared till June 1899, when he began to show ataxia of the right arm, and a week or two later, of the right leg. In August 1899 muscular power was found to be good, but on the right side all forms of cutaneous sensibility were impaired, especially muscular sense, and there was distinct astercognosis. As the case progressed, the ataxia of the right arm and leg increased: paresis of these limbs supervened, and eventually almost absolute paralysis. There was not much change in the hemianæsthesia, but astercognosis became more profound in the right hand. The reflexes on the right side became exaggerated, the plantar reflex gradually assuming the extensor form. The patient developed a disorder of speech, chiefly a verbal amnesia and fatigue on reading. Reversals of the colour fields, and contractions of the fields for form, similar to those supposed to be typical of hysteria, were present at several examinations, and on one occasion a temporary partial right hemianopsia was found. The pulse was slow, forty-five to sixty. The patient was very hysterical and emotional throughout the illness. In November, distinct atrophy of the right limbs and breast was noticed. The familiar cardinal symptoms of brain tumour were practically absent: there was no trace of optic neuritis, no vomiting, no vertigo, no convulsions: the very severe headache, typical of cerebral tumours, was absent, although the patient complained often of feelings of distress and pressure and occasionally of pain over the left parieto-frontal region (no mention is made of tenderness on pressure in this region). Despite the absence of these cardinal symptoms of cerebral tumour and the presence of so many hysterical signs (*e.g.* the mental state, the condition of sensation and of the fields of vision, variability of many symptoms, etc.), Mills diagnosed brain tumour, mainly from the progressive increase of the symptoms. He located it in the left superior parietal lobule near the median surface, and thought that it probably originated in the subcortex. He based this diagnosis on the fact that the earliest objective localising symptoms were sensory (impairment of cutaneous sensibility and loss

of muscular sense, with associated ataxia and astercognosis), and therefore indicated that the tumour had originated in the cerebral sensory area, which he has long held is distinct from the motor area and is situated in the parietal convolutions, gyrus fornicatus and quadrate lobule. He looked on the other symptoms (motor, visual, speech, etc.) as, in the main, indirect or pressure symptoms.

On November 24th Dr Keen performed an operation, of which full and clear details are given, and successfully removed a tumour from the site indicated by Dr Mills. The tumour measured 5·5 cm. by 4·5 cm., was partly cystic, and was of the nature of an endothelioma (Spiller). It had evidently begun as a subcortical mass and had recently burst through the cortex. The patient made a capital recovery: both ataxia and paralysis largely disappeared from the right limbs; sensation became practically normal; the speech difficulty quite disappeared.

Mills does well to emphasise the striking lesson, taught by this case, of the importance of not diagnosing hysteria until every probability of organic disease has been excluded. "It cannot," he says, "be too strongly emphasised that a large majority of the cases of brain tumour suffer sooner or later from hysteria."

The chief physiological importance claimed for the case is as evidence in favour of the view that the sensory centres, and more especially the centres for muscular sense, are distinct from the motor centres, and are situated in the limbic and parietal lobes. A careful analysis of the records of the case, while arousing admiration for the diagnostic acumen and surgical skill of the authors, fails to convince us that any certain deductions as to cortical localisation can be drawn from it. In proof of this, we may recall these facts: the lesion was a tumour of large size—measuring 5·5 cm. by 4·5 cm., while the cystic part was 10 cm. in depth; it evidently originated at an unknown depth beneath the cortex, and the exact part of the cortex affected could not be determined at the operation; it must have been capable of causing widespread disturbance and, indeed, evidence of this is got in the number of indirect or pressure symptoms enumerated by Mills (including temporary hemianopsia on one or two occasions); finally, Mills allows that "the tumour may have involved or compressed the tracts for cutaneous sensation passing between the thalmus and the cortex."

A paper on "**Subacute Combined Degeneration of the Spinal Cord,**" by Risien Russell, F. E. Batten and J. Collier (*Brain*, 1900, Part 89, p. 39), is an able and valuable contribution

to our knowledge of a disease which, although comparatively little known, appears to be far from rare: Dana, indeed, says it is apparently more common than multiple sclerosis. The paper is based on nine cases with seven autopsies, and it appears to prove conclusively that these cases are examples of an affection with a wonderfully definite clinical history and a characteristic morbid anatomy. The authors preface their account of the disease by referring to the fact that much confusion has been caused by regarding the cord changes which have been found in certain cases of severe anæmia as identical with the subacute combined degeneration of the cord in which anæmia may be, but is not always, a prominent symptom: the two conditions are "totally distinct." Later, it is true, they allow that "it is impossible to deny that the changes found in these cases (of severe anæmia) may represent an earlier stage of the affection which, when fully developed, presents so characteristic a morbid picture" as that of subacute combined degeneration. The point, however, which they emphasise, from a study of their cases, is that anæmia is not the one essential ætiological factor of the disease under consideration; in some cases anæmia was not present at all or at least to any notable degree, while in others it did not become obvious until some time after the signs of cord affection had appeared.

The disease appeared in the fourth and fifth decades, the average age being forty years. The patients were previously strong and healthy and in comfortable surroundings; in different cases there was a history of syphilis, alcoholism, prolonged suppuration, pregnancy, etc. One of the most striking clinical features is that the disease may be divided sharply into three stages by abrupt transitions in the symptoms. The whole duration of the illness averaged under nine months, varying from three to thirty months. In the first stage, the earliest nervous symptoms were subjective sensations in the legs (numbness, tingling, etc.), often very slight for months but constant, followed soon by slight spasticity and ataxia of the legs, with no sensory defect except very slight loss of sense of passive movement; the arms suffered in the same manner, generally later but sometimes at the same time. This stage usually occupied from a half to three-quarters of the whole duration of the illness. The onset of the second stage was marked by the rapid development of anæsthesia on the legs and lower trunk, and by the loss of ability to stand or walk (from loss of sense of position)—the change occurred in the course of one night in five cases. During this stage the motor power steadily declined, the legs became very spastic, the reflexes superficial and deep much exaggerated

(the extensor type of plantar reflex being very marked), the sphincters intact or showing only slight incontinence. The sensory changes were even more marked; sense of passive movement was absolutely lost in the legs and much impaired in the hands; cutaneous sensation of all forms was equally impaired more and more, always appearing first in the periphery (over the feet and hands), but, as it spread upwards, becoming segmental in distribution; the upper limit on the trunk—in one case as high as the upper limit of the area supplied by the sixth cervical roots—was always a sharply defined segmental limit; girdle sensations on the trunk and lightning pains in the legs were common, while in all cases there was severe constant unilateral dragging pain below the lower costal margin. There were no trophic changes in this stage; no optic neuritis or Argyll-Robertson pupil; slight nystagmus was common, and some of the cranial nerves (ocular, facial, laryngeal) were occasionally affected. This stage was usually a short one, averaging about five weeks in length. The transition to the third and final stage occurred rapidly in the course of a few days; absolute flaccid motor paralysis of the legs developed in twenty-four hours, and paralysis of the trunk muscles progressed upwards; the deep reflexes were lost early (*e.g.* the knee-jerks were lost in about four days), while the extensor response in the plantar reflex remained marked and the general superficial reflex excitability of the legs was greatly exaggerated till late in this stage; complete incontinence of the sphincters occurred and, in several cases, cystitis; there was rapid and great wasting and loss of faradic excitability in the paralysed muscles—in some cases there was extreme atrophy of all the observable muscles of the body; anæsthesia of the legs and trunk progressed upwards segment by segment, rapidly becoming absolute; paræsthesiæ, girdle sensations, lightning pains disappeared, but the heavy pain beneath the costal margin persisted to the end; in all cases œdema appeared rapidly in the legs and lumbar region, reaching its maximum on the fourth day of the flaccid stage and disappearing after about fourteen days; trophic changes in the skin of the extremities and bed-sores developed. Irregular pyrexia was a feature of all stages, and there was a marked increase in the pyrexia during the transition from the second to the third stage. Anæmia was not a constant symptom; in some cases it preceded the nervous symptoms, in other cases it appeared with them, while in others it was present only at the end; it was always of the nature of a secondary anæmia. The last stage lasted, as a rule, about six weeks; death occurred either from sudden syncope or respiratory failure. All the cases ended fatally and treatment was of no avail, except to

improve the anæmia temporarily. (Notes are given of an additional case, which probably belonged to this category and which made a rapid recovery after all the classical symptoms of the flaccid stage had appeared.)

The morbid changes found in the spinal cord — of which excellent illustrations are given — were most marked in the mid-dorsal region of the cord; at this level there was marked destruction of the white matter all round the periphery, while the grey matter and a small area of white matter around it were perfectly normal. Higher up, the affection tended to limit itself (although not sharply) to certain tracts, viz. the posterior columns, the cerebellar tracts and the crossed pyramidal tracts; degenerate fibres were found as high up as the mid-region of the pons. Lower down, the degeneration was limited mainly to the crossed pyramidal tracts, with some patchy affection of the posterior columns. In the affected areas only was there any affection of the vessels—engorgement and thickening of the walls: there was no round-cell infiltration of the tissues and no trace of meningitis. The grey matter, anterior and posterior roots, and posterior root ganglia were practically normal; the peripheral nerves also were so in most cases. The muscles showed simple atrophy of muscle fibre with corresponding increase of connective tissue. With regard to the cord-changes, the authors believe that two distinct processes were at work:—(1) A focal destructive lesion, of the nature of a parenchymatous degeneration of the nerve elements of the white matter; this began with swelling of the medullated sheath, which then underwent fatty degeneration and was absorbed along with the axis-cylinder, thus giving rise to a vacciolated condition, specially noticeable at the margins of the patches of degeneration. (2) A system-degeneration in the long tracts of the cord and consequent sclerosis.

The various views advanced as to the pathology of the affection are discussed: here we can only refer briefly to that which our authors strongly incline to. They believe that a toxic agent of unknown nature is responsible both for the changes in the spinal cord and for the anæmia where it exists: the anæmia is not the cause of the morbid changes in the cord, but it may play a part by making the nerve elements less resistant to the influence of the toxic. There is nothing to justify the belief that the vascular changes are primary and the changes in the nerve elements secondary, rather the converse: the topographical distribution, however, of the degeneration of the white matter of the cord depends on the vascular supply—it is precisely that of the peripheral arteries derived from the vessels of the pia mater. This distri-

bution probably finds its explanation in a special susceptibility of this region to the action of the particular toxin.

Full notes, clinical and pathological, of each case, together with an extensive bibliography, are appended.

A paper by Fürstner (*Archiv für Psychiat. und Nervenkr.* 1900, Bd. 33, H. 1, p. 240) on the **treatment of epilepsy** is peculiarly interesting and suggestive. He considers chiefly the treatment with bromides. It is the experience of everyone that the results of such treatment are so very uncertain that we cannot, in any particular case of epilepsy, foretell what degree of success will attend our treatment, or whether it will do any good at all. It is sometimes assured that the cases, which are not benefited by treatment are specially severe or inveterate examples of the disease, but Fürstner has met with this result in quite recent cases of what appeared to be epilepsy: on the other hand, he is convinced that attacks of years' duration and the accompanying mental symptoms may be cured by proper bromide treatment. Can we explain such different results by any other way than the assumption that the reaction to bromide treatment varies in different individuals? Are there any marks to distinguish the cases which from the first promise good results of treatment from those which will show no results? Such are the questions which Fürstner considers and they are well worthy of attention, as their solution will throw much light on the difficult subject of the prognosis in cases of epilepsy. Among the cases, which are often diagnosed as idiopathic epilepsy, and which do not promise good results from treatment, Fürstner puts the following groups:—(1) A group of cases, not at all uncommon, occurring chiefly in young people, which—although clinically very like epilepsy—are really cases of hysteria. This is often proved by the simple fact that, although such cases may have had attacks daily and medicinal treatment has proved absolutely valueless, mere change of outward surroundings, and especially removal to a hospital, may give good results at once, and bromides may be stopped suddenly without any unpleasant results. Fürstner gives notes of two such cases, which showed a special tendency to a peculiar form of skin affection from the bromide treatment. (2) A group of cases observed in young people. In these there has been congenital or early acquired organic brain disease (especially tumour, malformation or encephalitic foci), which at first gives rise to no signs except epileptic attacks: such cases are erroneously diagnosed as idiopathic epilepsy, and in them bromides are very uncertain in their results. The same is true of a closely-allied group of cases, viz., the convulsions which so

often occur in the cerebral palsy of childhood: the initial cerebral symptoms may be very slight or may disappear very quickly, and epileptic attacks may appear many years later and are believed to be idiopathic epilepsy, while in reality they are related to the old focus of disease. (3) Cases of epilepsia tarda. Fürstner believes that the cases in which epileptic symptoms appear late in life, *e.g.* in the third decade, may be divided into two classes, from the point of view of the result of treatment: a smaller group, in which bromides give thoroughly good results, and a larger group, in which no permanent benefit is got. In these latter cases, he believes we are justified in suspecting gross anatomical changes in the brain, which may have occurred at an early period of life, causing isolated convulsive attacks at that time and then remaining latent for many years: such initial cerebral symptoms are often forgotten, but their history is most important in the prognosis of many cases of epilepsy occurring late in life. This latter group also includes cases in which typical epileptic attacks appear for the first time pretty late in life without any other symptoms, and are followed—often at a considerable interval of time—by other symptoms pointing to atheromatous degeneration of the vessels: according to Fürstner, this is by no means rare in Alsace, where atheromatous degeneration of the vessels often occurs at a comparatively early period of life, *e.g.* in the third or fourth decade. (4) Cases of epilepsy due to a toxic cause, especially alcohol. The first condition necessary for treatment is exclusion of the cause, and this alone is often sufficient but is difficult to secure.

Even if we exclude all the cases which come under the above groups, there are undoubtedly cases of idiopathic epilepsy in which the bromides are useless; further observation, on the lines followed by Fürstner, cannot but make our knowledge more complete. As the surest means of securing the earliest and best recovery from epileptic attacks (and the consequent mental phenomena) beginning in childhood, and of preventing the occurrence of epilepsy in later life, Fürstner emphasises the importance of beginning a systematic bromide treatment at the earliest moment of the appearance of convulsions in childhood and continuing it long after the attacks have ceased. After the experience of many years, he believes that the danger of bromism is greatly exaggerated.

In the **treatment of epilepsy,** a considerable amount of attention has been given, especially in Germany, to the opium-bromide method advocated by Flechsig (*Neurolog. Centralbl.* 1893, p. 229). Extract of opium is given, beginning with ·02 to ·05 gramme two or three times daily: the dose is increased till

at the end of ten or twelve days about 1 gramme is given daily. This dose is continued for six weeks, when the opium is stopped suddenly and bromide in large doses (about 7 grammes daily) is substituted. This dose of bromide is continued for two months, and it is then progressively diminished to 2 grammes a day. This method has found not a few supporters but, on the whole, opinion seems to be decidedly against it. Thus, L. Pierce Clark in "A Digest on recent work on Epilepsy" (*Journal of Nervous and Mental Disease*, July 1900, p. 392) dismisses the subject somewhat summarily in a single sentence: "The opium-bromide treatment, which never had much to recommend it, has not been favourably commented upon in recent reports." It is claimed for this method that, by the preliminary use of opium, the effect of the later bromide treatment is increased, especially in young people, much less in *petit mal* than in *grand mal*: the number and severity of the convulsive seizures and the psychical troubles (delirium, melancholia) are said to be favourably influenced. There are many evident drawbacks to the method: there is the obvious danger of poisoning from such large doses of opium; in some cases, indeed, death has been recorded, especially at the period when opium is abruptly stopped (Bratz): such care and surveillance are required as can be got only in an hospital or some special home. It is difficult to persuade patients to go on with the full treatment. A survey of the literature on the subject makes it by no means clear that the advantages gained counterbalance such grave difficulties and dangers in the application of the method. Thus Séglas and Heitz (*Archives de Neurologie*, August 1900, p. 81) record the results of this treatment in two series of cases. In the first series of twelve cases, six were able to undergo the full treatment without any serious toxic results; in three of these the treatment had no result; while in the other three, watched for a year, the number of convulsive attacks was reduced by about a half. In the second series of ten cases, the administration of the opium caused toxic symptoms in all cases, so that the treatment was not continued. Such results are not encouraging.

J. Percy Wade (*The Journal of Nervous and Mental Disease*, August 1900, p. 447) writes of **Chloretone** as a "new, safe, and efficient hypnotic in the treatment of the insane." He has employed it in a limited number of cases, of which short notes are given, and has found it "most valuable and serviceable in the motor excitement of acute maniacal attacks and of agitated melancholia." It did not depress the heart (and therefore in this respect is not so dangerous as bromidia or sulphonal); the

secretions remained unchanged; there was no irritation of the stomach; and it was more agreeable to take than paraldehyde. "In all cases it produced drowsiness and quietude, followed in a short time by sleep of a natural character (lasting about six or seven hours), free from bad dreams and bad after-effects." Chloretone is but slightly soluble in water, and is best given in sherry wine or whisky. The initial dose should be at least 15 grains, and should be gradually increased until the desired effect is produced; the average dose given by Wade was about 35 grains.

GYNECOLOGY AND OBSTETRICS

ON THE INFLUENCES REGULATING THE CONSTITUTION OF MILK AND THE POSSIBILITIES OF MODIFYING IT

By R. C. BUIST, M.D., M.R.C.P.Ed.,
Gynecologist to the Royal Infirmary, Dundee

THE collation of the many and various opinions, mainly popular, relating to the composition of human milk would be a somewhat long story, and even the digesting of the more solid and scientific materials has required a considerable space in the *Monatsschrift für Geburtshülfe*, where the series of admirably careful and exhaustive articles by Thiemich is published (Bd. viii. pp. 521, 645; Bd. ix. p. 504; Bd. x. pp. 495, 644). Inasmuch as it is a naturally adapted diet we are only justified in condemning the milk in a particular case, when we find that a healthy child, without any ailment, does not thrive on it, and the limits within which it can vary in an individual without causing disturbance to the child are much more important than the average amounts of its various constituents. In a matter where the experimental results are not always in agreement it is important to review the methods employed by the experimenters. The simplest determination, and the only one of use for the practising physician, is that of Fat by extraction with ether. In this the error due to Lecithin (·170 to ·186 per cent.) is not important. For the estimation of Lactose the proteids must be removed by precipitation, and the possible error is greater than the text-books state. The determination of the Salts by incineration involves precautions to avoid the volatilisation of the alkaline chlorides, and for this reason various series of experiments are not of equal value. In the matter of Proteids it is certain that the caseins in the milk of woman and the cow are different, and that the results of different quantitative methods are not comparable. The estimation of the specific gravity gives, so far as several series of experiments show, no evidence of value as to the composition or suitability of the milk.

The evidence gained by microscopic enumeration and measurement of the milk globules is not of great value; but it is otherwise with the Colostrum corpuscles, which Czerny has shown to be leucocytes engaged in resorption of the fat when there is milk stasis. They are normally present at the end of pregnancy and decrease rapidly with the increasingly complete relief of the breasts. They disappear more slowly with a weakly child and, when nursing is omitted, reappear till the secretion is at an end. They are thus evidence of milk stasis; this may be overcome if it has not gone too far and if the breast is sucked by a vigorous child.

The amount of milk got from a breast may be determined by weighing the child before and after nursing, and it is certain that no mechanical method gets so much from the breast as the child does. During suckling the composition of the milk changes, the most marked and constant difference being a considerable increase in the percentage of fat. Milks taken at the same time from both breasts show considerable but very irregular differences, those in the fat percentages being again the most marked, and the excesses showing no preference for either side. Thus one patient (Johanessen) had at one time fat percentages 2·29 right, 6·29 left, and at another the relation was reversed, the figures being 5·83 right, 2·24 left. The value of such observations is that they show within how wide limits the composition of milk may vary without disagreeing with the child, a fact which goes far to justify the conclusion which Köppe has drawn that the natural diet of the child is by no means unvaried and that this is probably useful. In the use of artificial diets it would perhaps be no disadvantage if the nurse were not too scrupulously accurate in securing uniformity.

This conclusion is in complete harmony with the many observations that have been made on the changes in the milk from time to time on the same day. Fat and proteids increase and decrease by about a third of their whole amount and the sugar variation is about an eighth. During the early days the presence of the colostrum gives a relatively large quantity of proteid, while the sugar is below the amount which it reaches and maintains after the first two weeks. The salts also are in excess in the early period. The colostrum is as a rule absent by the end of the first week. After this early period there is some disagreement as to the nature of the changes, and the two varieties of opinion are based on extensive series of analyses. Pfeiffer's figures would show a progressive decrease in the percentages of proteid and salt, and a slight rise in those of sugar and fat. Hofmann and others find their figures to point to a somewhat steady composition. As a matter of fact the limiting

figures are well within the bounds of the already determined daily variation. Whatever the apparent percentage decrease, it is probable that the increased quantity of the ingest more than compensates the child. Some of the figures are determined from a series of observations too small to exclude the influence of the daily variations.

So far as the scanty observations go, difference of race has little influence on the composition of the milk, but women of certain races have a more plentiful yield. The ancient preference for nurses with hair of a particular colour has no better foundation, and the same lack of sufficient observations prevents any but the negative statement that there is no evidence to prove that age, multiparity, or even constitution of the mother has any specific effect on the milk. It is otherwise with the question of vigour of the child, for though the observations are few they indicate that the milk drawn by weakly children is richer than that drawn by the stronger.

The question of the influence of Menstruation is one of great practical importance. Unfortunately the amount of trustworthy evidence is very small. The most extensive observations, those of Schlichter in Vienna, seem to show that menstruation has no special influence on the composition of the milk or the well-being of the suckling, and give no support to the statement that there is a proportional increase in the amount of sugar. The question of the effect of the combined drain of nursing and menstruation on the mother does not, of course, concern us here, though it is a factor in the problem of the compatibility of lactation and menstruation. The prevalent opinion among women that the yield of milk is less during menstruation, as indeed most other questions relating to the yield, it is impossible to test accurately, inasmuch as the yield varies with the completeness with which the breast is emptied, and the complete emptying of the breast is in itself an abnormal event.

The influence of diseases, apart from infection, has been investigated in individual cases only, with the result that very few statements regarding it are justified. In albuminuria the milk albumen content has been found not only lessened, but varying inversely with the albuminuria. In two cases of traumatic anæmia, the whole solid content was less, while in an essential anæmia the quantity only was affected. Jaundice and alimentary disturbances have been observed to run their course without disturbing the child, but the milk in beri-beri seems to cause trouble.

The results of the investigations on infective diseases are both more definite and more interesting. Bacteria do not pass over unless they produce a local affection in the breast, but both

antitoxins and agglutinating bodies are carried to the nursling. The immunising power of milk is from one-fifteenth to one-thirtieth that of blood serum, and it is more readily transmitted by the rectum than by the stomach, at least in the case of the milk of a typhoid immune goat.

So far the sum of information amounts to this—the composition of milk varies normally within wide limits in the same woman within the same day, and the observations of the influence of age, multiparity, lactation, constitution, race, and also of menstruation and non-infective disease, have all lain within those limits, and the variations have all been consistent with the health of the nursling. In infective conditions, the milk acquires to a less extent the properties of the blood serum, and can convey the immunity to the recipient, either through the stomach or the rectum.

(*To be continued.*)

DISEASES OF THE EAR, THROAT AND NOSE.

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Naso-pharyngeal Disease in Pediatric Practice. — The main functions of the nose are: respiratory; olfactory; to give resonance to the voice, and to act as a regulator of the æration of the middle ear and the accessory cavities of the nose. For the proper performance of these functions it is essential that there should be patency of the nose and throat, and a healthy mucous membrane. Disease of the naso-pharynx is apt to be seen by the specialist late, when secondary troubles have developed, while the general practitioner usually has the opportunity of seeing such cases early and while there is yet time to obviate possible complications. It is therefore of the greatest importance that the latter should be fully alive to the importance of the subject, as pointed out by Huber in an interesting clinical study dealing with this subject, and should recognise the possible evils which may result from delay and neglect of conditions affecting this region.

The symptoms in nasal disease vary very widely. In one individual the brain seems to bear the brunt of the attack, in another the chest, in others circulatory or digestive disturbances are manifested, and so on. The relationship of the symptoms to the nasal condition is sometimes manifest, while in others a careful study will only clear up the case. According to different authorities, from 60 to 75 per cent. of ear troubles are secondary to diseases of the nose and throat.

Nasal obstruction, especially that associated with adenoids, may

cause defective lung expansion, a tendency to catarrhal troubles, catarrhal croup, frequent colds, reflex cough, restless sleep, etc. In most cases the general health suffers, there is anæmia, slow growth, retarded development, and often a lowered state of vitality which makes the child less able to resist if attacked by other diseases.

A high arched palate with narrowing of the jaw, and insufficient room for the teeth, and tendency to the early decay of the latter may often be noticed. Imperfect mastication, and the rapid bolting of the food, from the necessity of taking breath through the mouth, soon tends to produce dyspeptic symptoms. The irregular development of the teeth and jaw often causes defects in speech, while the high palate is often associated with deflections of the septum.

Enlarged cervical glands frequently appear in connection with hypertrophied tonsils and adenoids; and while surgeons recognise the importance of removing them, they not infrequently allow the adenoids and large tonsils to remain, to serve as a focus for future infection.

Deformities of the chest may appear, such as flattening and falling in of the thoracic walls, pigeon breast, etc., more especially when nasal obstruction is associated with rachitis.

The mental and nervous phenomena produced are very various. Apart from any impairment of hearing we may find that patients are inattentive, backward and dull, or have defective memory. Irritability, night terrors, bad dreams, sleep walking are often noticed, while attacks of chorea, asthma, local facial spasms, or headaches may be cured by the removal of adenoid obstruction. The direct lymphatic communication which has been shown to exist between the vessels in the naso-pharyngeal mucous membrane and those at the base of the brain may allow the passage of organisms from the naso-pharyngeal mucous membrane, and may help to explain the etiology of certain obscure inflammations of the brain and meninges.

Diphtheria and measles are more apt to produce certain complications in patients who have marked nasal obstruction, while on the other hand these diseases seem to be often the starting point for adenoids and nasal troubles which had not prior to the attack attracted any attention.

The subject is one of considerable importance and interest, and it is evident that the early recognition of nasal troubles and their treatment may do much to obviate some of the conditions referred to, and some of the complications which may have far-reaching effects.—*Archiv. of Pediatrics*, Vol. xvii. No. 8.

Local application of remedies in Non-suppurative Catarrh of the Middle-ear.—Non-suppurative catarrh of the

Middle-ear is primarily a disease of the mucous membrane, and it is, therefore, only natural, Bronner thinks, that we should endeavour to treat the mucous membrane directly. Various vapours, sprays, etc., have long been in use, but he has recently made use of a nebuliser connected with a large compressed air apparatus by means of which any desired vapour can be driven into the middle-ear through a eustachian catheter. He uses such substances as iodine, camphor, menthol, eucalyptus, benzoin, etc., dissolved in a hydrocarbon oil. In many cases he maintains it is much more efficacious than simple inflation. More definite information is required as to results, but it seems possible that treatment in this direction has not had sufficient trial.—*Trans. Otol. Congress*, 1900.

Excessive Hæmorrhage following the removal of a Myxo-fibroma from the Ear.—The removal of polypi from the ear is usually accompanied by sharp bleeding which, however, generally ceases rapidly without any special treatment. Clarence Dufour, however, records a case in which he had very troublesome hæmorrhage. The patient was a woman about fifty, with a history of suppurative otitis media for many years. A polypus was found projecting from the meatus, which he proceeded to remove with the snare. On attempting to cut through the tumour it was found to be too tough and it had to be removed by torsion, and proved to be a myxo-fibroma. Severe arterial hæmorrhage at once followed, which could only be controlled by compressing the carotid artery, and the bleeding at once recurred whenever the pressure was removed. Under an anæsthetic the meatus was packed as firmly as possible with iodoform gauze which was left several days in position, with the result that the bleeding entirely ceased. The writer explained the hæmorrhage by supposing that the small branch of the internal carotid artery which is distributed to the floor of the middle-ear was implicated by the growth, and that the walls of the vessel partook of the fibrous character of the growth and therefore did not contract as they usually do on the removal of a growth.—*Archiv. of Otol.* Vol. xxix. No. 1.

OPHTHALMOLOGY

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Endemic Bath Ophthalmia (by Dr Fehr, Berlin, *Annals of Ophthalmology*, April 1900).—Some six months ago Schulz made a report of a number of cases of trachoma among those who

were in the habit of frequenting a certain swimming bath in Berlin. Fehr reports forty more cases which were observed in Hirschberg's clinic. The affection was evidently of a very contagious nature. Clinically the symptoms did not exactly resemble those seen in the conjunctivitis caused either by the Koch-Weeks bacillus or the Morax-Axenfeld diplobacillus, they being much less acute. Even in the worst cases there was no swelling of the lids, and there was little or no secretion. Burning and lachrymation were present, but never in such degree as to interrupt, or rather interfere, with one's working capacity. The affection bore a certain resemblance to atrophic conjunctivitis. Bacteriological examinations were negative. The cases differ from true trachoma in their being very amenable to treatment, and for this reason Fehr does not regard them as trachoma. On this point he differs from Schulz.

Retinal Detachment (by Ludwig Gabler, *Annals of Ophthalmology*, April 1900).—Gabler has given us the result of the treatment of this class of cases during the last ten years at the Eye Clinic in Budapest. In this time 76,402 eye cases were seen, and 120 of these were affected with detachment of the retina. High myopia was present in practically all the cases. Among the 120 cases 44 were treated. Puncture of the scleria was performed twelve times, and four of the patients were improved, and in eight the condition remained unchanged. In eleven cases iredectomy was performed, with the result of improving five cases, while three remained unchanged, and the remaining three grew worse. In the cases (seven cases) in which puncture of the sclera was associated there was no change. In the remaining cases pilocarpin injections, iodide of potash, inunctions, were all employed, but with little or no effect, and the same may be said of one case where injection of tincture of iodine was employed.

Congenital Ocular Lesions in a Child whose Mother suffered from an Attack of Typhoid Fever during the latter part of pregnancy (by Antonelli, Paris, *La Clinique Ophtalmologique*, Jan. 2, 1900).—Antonelli first saw the child when it was in its twelfth year. The ocular lesions were as follows:—In each eye there were traces of cortical shreds with anterior polar cataracts which were probably due to a choroido-retinitis, the marks of which were very pronounced. The anterior polar cataracts and the cortical shreds were noticed by the mother at the time of birth of the patient. With the exception that the child was undersized and somewhat thin he otherwise appeared

them as being devoid of any proper wall, and as opening freely on the surface of the cell protoplasm. Bethe also by special methods was able to demonstrate the presence of similar canaliculi in his nerve cell protoplasm, and though in minor details he is at variance with Holmgren, his work is in the main confirmatory. Nelis described peculiar bands which remain unstained and form highly complex figures in the cytoplasm of various nerve cells, producing a very characteristic appearance, to which he applied the term "état spirematteux du protoplasme." Though their identity is denied by him, this "spirema" of Nelis can be regarded only as another aspect of the appearances described by Golgi and by Holmgren.

The analogy is drawn by Nelis between the "état spirematteux," described by him as a normal condition of the nerve cell, and the supposed clefts or fissures in the cell protoplasm described by Nageotte and others after various experimental poisons. Nelis was confirmed in this opinion by observing in animals poisoned with arsenic or inoculated with rabies that these apparent clefts became more obvious, and he argued that this represented a structural feature of the normal cell which became exaggerated in certain pathological conditions. Holmgren, however, in a later contribution maintained that these pathological clefts or fissures were really the dilated canaliculi previously described by him. He found that accumulations of the chromophile substance correspond to definite dilatations of the canaliculi which, moreover, have proper walls, and cannot therefore be regarded as mere fissures in the cell protoplasm. By stimulating the nerve-cells with the induced current he was enabled to obtain not only a quantitative increase of the chromophile substance but also a uniform dilatation of all the endocellular canaliculi, which were thus demonstrated to be far more numerous than he had at first supposed. In his earlier work he had succeeded in observing only the larger canaliculi which communicate with the pericellular lymphatic channels, whereas under the influence of pathological stimuli many more delicate canaliculi were revealed in the cell protoplasm.

One of the most recent papers on this subject is that published by Donaggio in the early part of the current year. His observations were made on the cells of the spinal ganglia, cerebral cortex, pons and medulla of the normal dog, and their result was to confirm in every important detail the earlier discovery of Holmgren concerning the presence of endocellular lymph canaliculi. He finds that there is no notable difference in the characters and distribution of the canaliculi in the various types of cells, but while in the same cell the calibre of the canaliculi does not vary much, there is often marked difference in calibre

between the canaliculi of one cell and those of another in the same region. This observation on the difference in calibre between canaliculi of various cells and the slight variation in calibre among the canaliculi of the same cell, coincides with another observation regarding the amplitude of the meshes formed by the fibrils of an endocellular reticulum previously described by him—a reticulum entirely different in structure from that described by Golgi and revealed by different methods. The reticulum of Donaggio is found to be of different density in different cells of the same region, and as it pervades the whole cytoplasm, and as the canaliculi can traverse only the interstices left free between the fibrils, it follows that there is a relation between the amplitude of the meshes and the calibre of the canaliculi.

A second feature described by Donaggio is the presence of a perinuclear lymph space, which he believes to be an integral part of the nerve-cell. According to his method of staining, the nucleus appears to be surrounded by an "unstained halo" of the same dimensions and appearance as the lymph canaliculi themselves. With this perinuclear space the lymph canaliculi of the cell protoplasm freely communicate. He has not, however, been able to observe the relation described by Holmgren between the endocellular apparatus and delicate pericellular vessels. In a short note published soon after Donaggio's description, Colucci directs attention to the fact that in 1897 he had described the presence of a perinuclear halo in certain types of nerve cells, but he did not then regard it as of much significance, although he now believes that the more recent views as to its functional importance are in all probability correct.

In the light of these more recent researches it is of interest to return to the views of Adamkiewicz, to which reference has already been made. The existence of vessels as distinct from canaliculi within the nerve-cell protoplasm has been confirmed by Holmgren, who has observed one or two minute vessels approach the nucleus and supply it. He believes they are identical with the vessels described by Adamkiewicz, but he takes exception to the view that the structure commonly known as the nucleus is mainly a cavity. He considers that Adamkiewicz was led to adopt this view by the fact that his injection had penetrated one of the endocellular vessels, had ruptured its wall, and had been extravasated around the nucleus, thus obscuring it and giving the appearance of a space filled with the injection. Donaggio amends this criticism by explaining that the injection could readily pass into the perinuclear lymph space described by him.

It is not yet possible to forecast the significance of these

discoveries. It is apparent, however, that to meet the extraordinary demands of the most highly functioning of the animal cells an elaborate arrangement of lymph canaliculi and of blood-vessels is provided. As nutriment is by this means diffused through the cell protoplasm, so also are deleterious and noxious substances, and there is already evidence to the effect that the earliest reaction of the nerve cell to many pathogenic irritants is exhibited by the lymph canalicular apparatus in its protoplasm.

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I have to acknowledge the kindness of Dr W. Ford Robertson in enabling me to have access to the papers of Golgi and other Italian neurologists, and I am indebted to the reviews of Lugaro and Guiseppe Levi in the *Rivista di Patologia* for parts of this summary.

NOTICE.

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THE SCOTTISH
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THE INVENTION AND EVOLUTION OF THE MIDWIFERY FORCEPS

The Inaugural Address to the Midland Medical Society at Birmingham on 26th October, 1900

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READERS of Sir Walter Scott may remember an incident in *The Surgeon's Daughter* where with the aid of a king's messenger Matthias de Monçada entered the house of Mr Gideon Gray, surgeon in the village of Middlemas, to claim his erring daughter. "The whole militia of the sick lady's apartment" are seen keeping the intruders at bay, till the doctor himself came on the scene and after parley admitted that he "must surrender her to the laws of the country. 'Surrender, Doctor Gray! It's a shame to hear you speak, and you that lives by women and weans, abune your other means,' exclaimed his fair better part."

Pre-eminence of Midwifery in General Practice.

You see the shrewd wife of that country doctor knew well that the largest share of her husband's hard-earned fees accrued from his attendance on child-bearing women and on the children whom he brought into the world. Gideon Gray's experience in this respect corresponds to the experience of all his brethren, both in town and country who are engaged in general practice. When an obstetric teacher is called on to address

the members of a Medical Society composed to a large extent of general practitioners he knows, accordingly, that he has to speak to a company of his brethren, who, like himself, live by women and weans above their other means. And since you have done me the honour to invite me to deliver your Inaugural Address on this occasion, it has occurred to me that it might interest you to be told something of the History of the Midwifery Forceps. The instrument that is every day, perhaps I ought to add more emphatically, every night rescuing more lives and cutting short more pains than all the other instruments in the professional armamentarium, and that has been rendering this service for two hundred years—I fancy that even those of you who are most familiar, not only with its employment, but with the romance of its invention and the progress of its evolution, will not be unwilling to hear the story of its discovery and development over again.

Rise of Modern Midwifery.

Modern midwifery may be regarded as taking its origin towards the close of the sixteenth century, when Ambrose Paré revived and recommended in his surgical writings the operation of Turning as a means of delivery in difficult and dangerous cases, and his pupil, Guillemeau, still further popularised the procedure in his special work on Midwifery. Through the painful centuries women had depended for aid in their deliveries on members of their own sex who had acquired some skill and experience more or less in the management of labour, and who sometimes transmitted the practice from mother to daughter. These "Wise-women" had little or no medical knowledge or surgical skill. When they had a labour in hand where nature was insufficient they called in a surgeon or physician, too often when the life of mother or child, or both, was already doomed. The practitioner thus called in had most frequently to do what he could to terminate the delivery by some embryotomic procedure. To the dislike of the presence of a man, the sufferer had the added dread of a dangerous and often deadly operation when a medical practitioner was called in to aid a delivery. Apart from the rule of thumb knowledge that may have passed from one individual to another, midwives were dependent for any

instruction they had on books written for them by men such as Eucharius Rösslin and Jacob Rueff.

Sage-Femme or Accoucheur?

A struggle was now about to begin, however, between them and the members of our profession as to whether the midwife or the doctor should be paramount in the delivery-room, in which the gradually extending power of the printing press gave the men who wrote and read the works on science and art an advantage over the women. It was not that there were absolutely no female writers on obstetrics. Louise Bourgeois, the Court *sage-femme* of Mary of Medici, Queen of Henry IV., wrote a book for the benefit of her daughter, in which she claims to have proposed and carried out the operation of Turning in cases of placenta praevia, though she may have learned it from her husband who was a friend of Guillemeau. Marguerite de Tertre also, the *sage-femme*-in-Chief at the Hotel Dieu, wrote a text-book for her pupils in 1717. But neither these, nor the works of Justine Sigmundin in Germany, or of Jane Sharp or Mrs Nihell in England, could hold their ground against the many volumes that were produced by men trained as physicians and surgeons, some of whom began to make a specialty more or less distinct of obstetrics.

Influence of Fashion.

In the middle of the seventeenth century another element came in to contribute to the transference of midwifery from the care of women to the charge of men—the element of fashion. Astruc is the authority for dating the era of man-midwifery from the confinement of Louis de la Vallière, the earliest of Louis XIV.'s concubines, in 1663. The Great Monarch, as his people loved to call him, was then passionately devoted to the fair, perhaps delicate, and slightly lame girl, and as she wished her condition and her confinement to be kept secret, he had her attended by Jules Clement, who afterwards attended members of the Royal family both of France and Spain, as well as other ladies of the Court. The custom which was begun in Royal circles in France and Spain and England gradually spread through the community, but it

was not till after many a tirade had been written against men-midwives and man-midwifery that in the course of the eighteenth century the doctors were left supreme. In the transition period it might happen that a lady chaffed by her friends for having been laid by a woman would reply, "But my husband paid a doctor to be in the house at the time though I didn't need him." And has not Tristram Shandy related how his father had engaged Dr Slop against the mother's wishes to be in attendance, and how the doctor sat in Shandy Hall, sometimes dozing, sometimes discussing various themes with the anxious father and Uncle Toby, until he was summoned eventually to deliver the lady with disastrous results to the bridge of the baby's nose?

Harmless Forceps Wanted.

The power of the printing-press, however, and the power of fashion conjoined would not have sufficed to give men predominance in the lying-in room unless they had been able to devise harmless forceps for the extraction of the infant when its head was impacted in the pelvis. From the time that Paré had demonstrated the value of Turning, that operation had enabled them to deliver living mothers of living children in many cases of difficulty, and the growing appreciation of it tended to lessen the dread with which the advent of the surgeon was regarded. As a result, we find towards the close of the seventeenth century, practitioners directing attention more and more freely to the difficulties of labour, and casting about for some safe method of extracting the impacted head—Mauriceau, Peu, De La Motte, and others, telling us the meanwhile that they preferred to meet with difficult breech or transverse cases rather than with the incarcerated head. There were rumours in the obstetrical world that the much-needed implement had been discovered. But the leading obstetricians remained incredulous.

The First Published Forceps.

Jean Palfyn, Anatomist and Surgeon in the City of Ghent, has the merit of having first offered to the profession a rudimentary pair of safe forceps. He had already in 1708 published an anatomical work, and when in Paris, in 1720,

putting a volume through the press, he submitted to the Royal Academy of Sciences a forceps which is figured in Heister's surgery (Fig. 1). It appears as a spoon-shaped instrument with a wooden handle capable of application to the side of the infant's head and worked as a lever. Or two of them might be used —one applied to each side of the head—and the parallel handles bound together with tapes. A similar instrument was claimed about the same time by another Belgian, Gilles le Doux of Ypres, as his invention. De la Motte writing in 1722 in his commentary on the last of his cases promises if the special *tenettes* which he has contrived prove to be as serviceable as he expects, to give a true and faithful account of their value. "For," he goes on to say, "far be it from me to make a secret of these instruments in the fashion of a certain surgeon of Ghent, who came to Paris some years ago to propose to the

FIG. 1.—PALFYN'S FORCEPS (FROM MULDER).

chief of the Academy of Science a certain iron instrument by means of which he vaunted himself able to deliver all women when the heads of the children were caught or impacted in the pelvis without causing them any harm. One of the Master Surgeons in Paris who had been charged with the examination of the instrument as to the possibility of the feat and the pretended value of its application, did me the honour of asking what I thought of it, without saying more about the instrument as he had been pledged to secrecy as to its structure. I did not hesitate to tell my friend that whatever the construction of the instrument the thing was as impossible as to pass a cable through the eye of a needle. In fact, how could a steel or other instrument pass the place where the head is arrested or incarcerated in such a fashion that one can't introduce a catheter for the evacuation of urine that may have been retained several days, any more than a clyster pipe or even a

leaf of myrrh. How, I say, could one introduce this instrument and make it work so precisely that it would draw the child out of the peril to which the narrowness of the canals exposed it. It is certainly a snare and a delusion. If the thing be as true as it is false, and the man die without making this instrument known, he would deserve to have a worm gnaw his entrails throughout eternity, because of the crime he commits in not giving the means of saving the lives of an infinite number of poor children who perish for want of it, all human science not having been able till now to discover it. But on the other hand he will be crowned with benedictions if what he advances be true, for the great good this instrument could do would make him be blessed by God and man through the ages of ages (pendant les siècles des siècles)."

William Chamberlen, Huguenot Refugee.

For more than a century the forceps had already been pursuing a career of beneficence. But its employment was restricted to the hands of the members of a very remarkable family, which furnished physicians to King James I., King Charles I., King Charles II., King James II. and King William, to their respective Queens, and to Queen Anne. William Chamberlen, a Huguenot doctor in Paris, may have been a friend of Ambrose Paré as they were fellow-citizens, fellow-practitioners, and fellow-believers. Paré was only saved from slaughter on the night of St Bartholomew by the intervention of the King, Charles IX., who hid him in his own closet. William Chamberlen had made his escape to England a short time previously, bringing with him his wife, Genevieve Vingnon, and his eldest son Peter, a lad somewhere in his teens.

Two Peter Chamberlens, Brothers.

He had several children, but the only other one that concerns us was a boy born in 1572, some four years after their arrival in Southampton. To the confusion of their biographers this younger son received the same name as his elder brother Peter. These two brothers both became celebrated London physicians, and laid the foundation of the

family fame and fortune as accoucheurs. The elder of the two, who outlived the younger, is found already in 1614 filling the office of surgeon to the Queen of James I., by whom he was presented with a diamond ring. When Henrietta Maria, wife of Charles I., miscarried of her first child we are told "she had neither midwife nor physician about her; only the poor town midwife of Greenwich was sent for who swooned with fear as soon as she was brought into the Queen's chamber, so as she was forced presently to be carried out; and Chamberlayne the surgeon was he alone that did the part of a midwife." This elder Peter had no son to succeed him, but the younger had several. Of these the only one who continued the professional succession bears again the name of Peter.

"Dr" Peter Chamberlen.

This third Peter is distinguished from his father and uncle by the designation of doctor, for whilst they had only qualifications from the Company of Barber-surgeons, this fourth member of what he himself calls "an Asclepiad family" attained the degree of Doctor of Medicine in the University of Padua when he was only eighteen years of age, and at later periods he took the same degree in other universities. Dr Peter Chamberlen was a man of boundless energy and great versatility, and among his many projects he devised a scheme for the incorporation and registration and education of midwives. He failed, partly, perhaps, because the time was not ripe, but partly also because he wanted, as one "Philolethes" said at the time, "to get himself made Vicar-General of the midwives in city and suburbs; and for the maintaining a garb fitting the greatness of his place he would have a groate for every childe borne within his jurisdiction, for which he would have kept good orders and rules amongst them, set up a lecture and, himself a keen reader, unfolded the hard places and passages in Aretæus and Aristotle's Problems and in all things that concerned women's business have been a very ready necessary young man." He attained such fame that the Emperor of Russia wrote with his own hand a letter to Charles I. begging him to allow the doctor to enter his service; and he acquired such a fortune that he became possessed of a

property in Essex, Woodham Mortimer Hall, where he died in the eighty-third year of his age. Dr Peter, besides other children, left three sons, Hugh, Paul and John, to whom he communicated the "knack in midwifery" which "Philolethes" says his father had left with him.

Dr Hugh Chamberlen, Senior.

Dr Hugh is, like his father, Dr Peter, a man of many schemes. But he interests us chiefly from his relations with the great Parisian obstetrician, Mauriceau, and his boast of the family secret. Mauriceau tells us that in August 1670 he had on hand a case of difficult labour in a little primipara of thirty-eight, when there appeared on the scene an English physician named Chamberlen, who from father to son had practised obstetrics in London, where for long he had acquired the supreme degree of reputation in this art. Mauriceau thought the labour impracticable; but the Londoner said he could deliver her safely in a quarter-of-an-hour. He was left to try his skill, worked away for three hours without stopping to take breath, and seeing the woman like to die in his hands, at last desisted. She only survived the injuries he had inflicted on her four-and-twenty hours, and died undelivered. At the autopsy Mauriceau found the uterus all torn and perforated in various places, and he goes on to say that this doctor had come to Paris six months before hoping to make his fortune, and circulating a rumour that he had a private means of terminating labours of this kind. He had even proposed to the first physician of the king to sell him his pretended secret for a remuneration of 10,000 crowns, but his failure in this one case so disgusted him that he set off home a few days after, seeing that there were in Paris more able obstetricians than himself.

The Boast of the Family Secret.

In 1672 Dr Hugh published a translation of Mauriceau's midwifery, and in the preface he wrote some sentences that made a hum through the whole obstetric world. "In the 17th Chapter of the second Book," he writes, "my Author justifies the fastening Hooks in the Head of a Child which comes right, and yet by reason of some difficulty or dispropor-

tion cannot pass; which I confess hath been, and is yet, the practice of the most expert Artists in Midwifery, not only in England, but throughout Europe: and hath very much caused the Report—that where a Man comes, one or both must necessarily die: and is the reason why many forbear sending till the child is dead or the mother dying. But I can neither approve of that practice nor those delays; because my Father, Brothers, and myself (though none else in Europe that I know) have by God's Blessing and our Industry, attained to and long practised a way to deliver Women in this case without any prejudice to them or their Infants: though all others (being obliged for want of such an Expedient to use the common way) do, and must endanger, if not destroy, one or both with Hooks. By this manual Operation may be dispatched (when there is the least difficulty), with fewer pains and in less time, to the great advantage, and without danger both of Woman and Child. If, therefore, the use of Hooks by Physicians and Chirurgeons be condemned (without thereto necessitated by some monstrous Birth) we can much less approve of a Midwife's using them, as some here in England boast they do, which rash presumption in France would call them in question for their Lives.

"In the 15th Chapter of this Book, my Author proposeth the conveying sharp Instruments into the Womb to extract a Head, which is a dangerous Operation, and may be much better done by our fore-mentioned Art, as also the inconvenience and hazard of a Child dying thereby prevented, which he supposeth in the 27th Chapter of this second Book.

"I will now take leave to offer an Apology for not publishing the Secret I mention we have to extract Children without Hooks where other Artists use them, which is, that there being my Father and two Brothers living, that practise this Art, I cannot esteem it my own to dispose of, nor publish it without injury to them: and think I have not been unserviceable to my Country, although I do but inform them that the fore-mentioned three Persons of our family and mySelf can serve them in these Extremities with greater safety than others."

There were various conjectures as to what the Chamberlen secret could be. Some thought it might be the lever; others

imagined it was some modification of the crotchets, as in one of Hugh's notes he speaks of "our hooks": and again, as he speaks of it once as applicable to shoulder cases, some conjectured that it was only after all a special knack in turning. Some regarded his statement as the vain boast of a charlatan. He was a restless spirit, got mixed up with a disastrous land-bank project that was to make everybody rich, and is supposed to have died in exile in Holland where he seems to have sold his secret or part of it to Roonhuysen. It has never been cleared up what passed between Hugh Chamberlen and the Dutchmen. Hinze says Roonhuysen and Ruysch divided the secret between them so that each had a blade. There is some evidence that they possessed a kind of forceps, though the implement they were eventually known to use was the lever. What is certain is that Roonhuysen and Ruysch with their colleagues and successors in the Academy of Amsterdam made a profit of the business, by getting a law passed that no one might practise midwifery without first having paid them to be taught the use of their instrument.

Dr Hugh's brothers, Paul and John.

Paul, Dr Peter's second son, had a good deal of the quack in him, and made traffic with an Anodyne Necklace which should let the babies who wore it cut their teeth painlessly, and give women in labour "an extraordinary easy time." Of John it is known only that he possessed the family secret and practised midwifery with success.

Dr Hugh, junior, the last of the Chamberlens.

Hugh had a son of his own name who kept up the family practice and the family position till his death in 1728. Freind in his letters to Mead on the small-pox in 1719, says of his fifth and sixth patients—cases of small-pox respectively in a pregnant and a puerperal woman—that they were seen in consultation with H. Chamberlen, of whom he speaks as *peritissimus* and *vir experientissimus*. He moved in the highest circles and was on specially intimate terms with the Duchess of Buckingham, daughter of James II. In Westminster Abbey an imposing cenotaph celebrates his memory with a

long Latin elegy composed by his friend Atterbury, Bishop of Rochester, which tells that the monument was raised by Edmund, Duke of Buckingham, in gratitude for life saved at birth, and for health often restored and at last confirmed. A journal in announcing his decease says, "He was the last of that ancient family who practised the art of Midwifery in the Kingdom except Dr Walker in Great Suffolk Street, who (also) is grandson to Dr Peter Chamberlen."

Discovery of their Secret.

That the instrument which gave the Chamberlens for four generations their pre-eminence as obstetricians was none other than the safe midwifery forceps was conclusively demonstrated in 1813. In that year there was discovered in a closet above the porch of Dr Peter Chamberlen's old mansion, Woodham Mortimer Hall, a chest, the obstetrical contents of which were deposited by Mr Carwardine among the Archives of the Medico-Chirurgical Society of London in 1818, where they may still be seen. The most important are four pairs of efficient midwifery forceps. But for years before the last of the Chamberlens was laid in Westminster Abbey their secret had begun to leak out. How it came about no one knows. It is told of Roonhuysen's secret that he had an assistant to whom he had often promised to reveal it and as often put him off. One day when he had just returned from a labour case an Amsterdam Burgomaster required an interview with him. In the hurry he tried to hide his tools; but whilst the interview was going on Vanderswam took them out and sketched them. Some medical friend or some intelligent midwife may have got a sufficient glimpse of the Chamberlen tongs to enable them to describe their construction. Le Roy avers that Palfyn when in London had a sight of Chamberlen's forceps. Johnson tells us he possessed a pair of forceps that belonged to Mr Drinkwater, surgeon and man-midwife in Brentford, who began practice in 1668, and died in 1728. In 1733 Edmund Chapman published an *Essay on The Improvement of Midwifery* in which he describes the use of the forceps and speaks of them as being of different sorts and well known to all the principal men of the profession, both in

town and country. In the same year Mr Alexander Butter published a description and gave a sketch (Fig. 2) of Dusé's forceps in the third volume of the *Medical Essays and Observations published by a Society in Edinburgh.* The editor of this volume in noticing Chapman's work finds fault with him for not describing his instrument, and in 1735 Chapman acted on

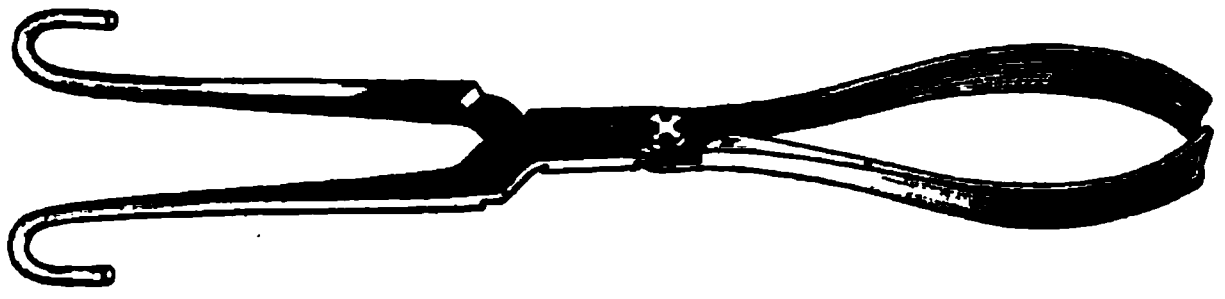

FIG. 2.—DUSÉ'S FORCEPS FIGURED BY BUTTER.

the hint and gave a figure (Fig. 3) of his forceps in a second edition of his work. In 1734 Dr Edward Hody published the *Cases in Midwifery* which had been recorded by Mr Giffard, a London practitioner, who for several years had made use of a pair of forceps of which a figure is shewn. In

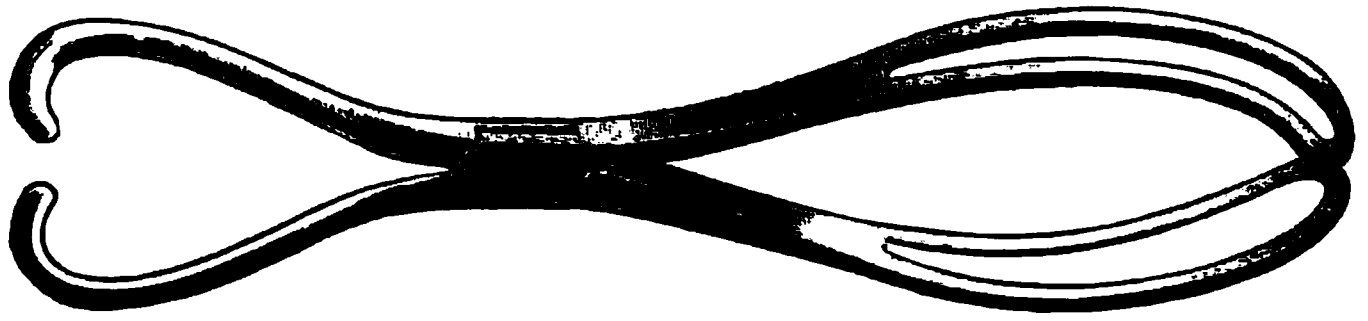

FIG. 3.—CHAPMAN'S FORCEPS.

France, besides Dusé, the Gregoires, father and son, Mesnard, Levret and others began to use and uphold the value of the forceps. But the man who did most to popularise its employment and put into the hands of his professional brethren the implement that gave them the command of the delivery-room was William Smellie,

The Greatest of British Obstetricians.

The story of Smellie's life has been ably and sympathetically told by his fellow-townsman, Professor Glaister. Born in 1697 and brought up in Lanark, he got there his first professional instruction at the hands of the parish doctor, Mr Inglis, and afterwards in Glasgow furthered his knowledge, probably in the University and as a pupil of Dr Gordon.

There he became friendly with another medical aspirant, Tobias Smollett, who was afterwards to gain laurels in other fields and to assist Dr Smellie in the writing of his books and putting them through the press. From the first Smellie took an interest in midwifery, made notes of special cases, kept himself abreast of the literature of the subject, procured a pair of the forceps described by Butter, which he found unsatisfactory, and after nineteen years' practice in Lanark set out to London and Paris in 1739 to glean what he could in these great centres of obstetrics. He remained in London not only to extend his own knowledge and experience but to become the foremost of a large band of teachers, to put the impress of his genius on the apparatus of the accoucheur, and to publish the works which have given him a place among the immortals. In 1759 he retired to the property of Smellom which he had purchased in the vicinity of his native town, and there in 1763 he died. The influence of his teaching may be judged from a sentence from Mrs Nihell's tirade against the practice of man-midwifery. "Think," she says, "of an army, if but of barely Dr Smellie's nine hundred pupils, let loose against the female sex, and of what a havoc they make of both its safety and modesty, to say nothing of the detriment to population, in the destruction of infants."

A Great French Rival.

I wish some of our French colleagues would render on behalf of Levret the same service that Professor Glaister has rendered the profession in the case of Smellie, and give us a sketch of the life and times of his great Parisian rival. Born in 1703, he lived through the epoch that saw the greatest transformations occurring in the theory and practice of mid-wifery. His active, ingenious mind led him to take a large share in the movements, which he was perhaps all the more free to do because a great financier, whom he attended in a lengthened illness, left him in 1739 a fortune that secured his independence. He attained the highest professional honours, and was accoucheur to the Dauphiness and chief of the French School of Midwifery ere he died in 1780. His brilliant services in the furtherance of the construction and use of the forceps would have been better appreciated if his ingenuity had

not led him to contrive a tire-tête for extracting the head left in the uterus after the trunk had been torn off, and if he had not been so enamoured of this contrivance as to recommend its use in some instances as a substitute for forceps in head-first cases also.

Construction of Forceps.

But it is time to turn from the men who handled the forceps to look more directly at the implement itself. It consists of two *Blades*, that in the earlier works are sometimes called *bows* or *clams*, for application to the fœtal head. The blades, curved towards each other, are the most important parts of the instrument, so that each half is spoken of κατ' ἐξοχήν as the blade—right or left respectively. They may present many

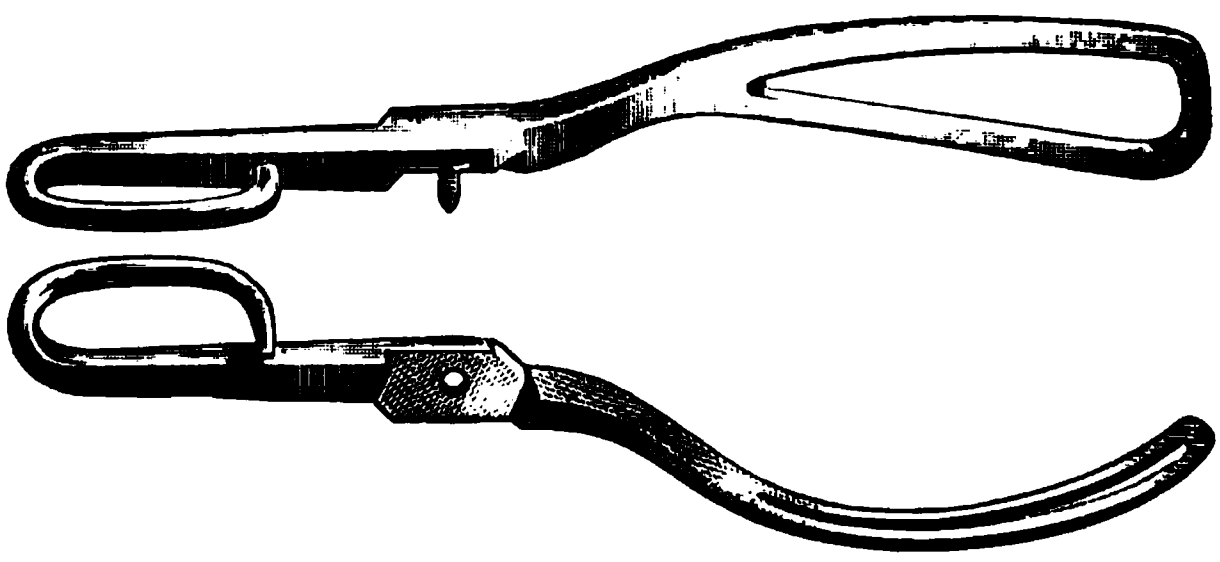

FIG. 4.—CHAMBERLEN'S FORCEPS WITH LOOPED HANDLES AND LOOSE PIN-JOINT (FROM AVELING).

variations in size, fenestration, and so on, but blades having a head-curve that is sometimes called fœtal, or cranial, or cephalic, are found in every midwifery forceps. Then each blade is furnished with a *Handle* for purposes of manipulation. The third essential is the *Joint* or *Lock* where the two blades are adapted to each other and are usually crossed. If we look at the largest (Fig. 4) of the three types of forceps that Dr Peter Chamberlen's widow locked up in a box, along with her husband's last tooth, a New Testament, and Anne of Denmark's diamond ring, and hid for a century between the floor of one closet and the roof of another, we see the three elements in their simplest, and what may quite well have been their primitive form. Dr Aveling has shown very conclusively that the actual inventor of them was not

Dr Peter, as he at one time believed and affirmed, but his uncle, Peter the elder, the lad who came over from Paris to Southampton with his Huguenot father. The Chamberlen forceps is sometimes spoken of as *tongs*—by Smellie among others—and no name could more exactly describe it. One can fancy Peter Chamberlen coming in from an impacted labour where he had failed to turn, had vainly tried to get his fingers round the head and had at last been obliged reluctantly to perforate, and as he took up the small hand tongs to put a lump of coal on the fire he might say to himself, " If I could only have grasped the child's head with this, it might have been living now." His tongs made entirely of metal, with their looped handles and scissors-joint, are specialised from coal-vase

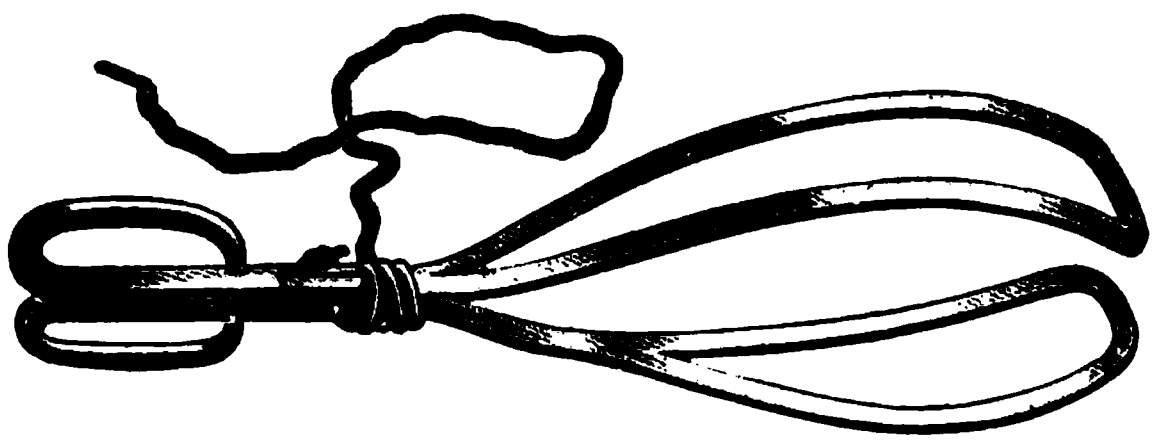

FIG. 5.—CHAMBERLEN'S FORCEPS WITH LOOPED HANDLES AND TAPE INSTEAD OF PIN IN JOINT APERTURES (FROM AVELING).

tongs simply in having their blades widened and fenestrated for better grasping of the fœtal head, whilst the pin of the joint is rivetted only into one of the shanks so as to allow of their separate introduction into the vaginal cavity. If the blade with the joint-pin was first introduced the other blade with the joint-perforation would be adapted to it by getting the pin to fit into the orifice. Such is the construction of the largest of the three types of forceps found in the Chamberlen chest. The adaptation of pin to perforation may sometimes have been attended with difficulty. That would lead to the construction of the two pairs nearly of the same pattern (Fig. 5) from which the pin is entirely removed. In these the two halves are held together with a braided cord, having a knot at one end and a tag at the other which was found passed through the pinless perforations of the joint. The third variety of forceps used by the Chamberlens is of different

construction (Fig. 6). The joint is formed at the lower end of the left blade, the fenestrum of which remains open to embrace the shank of the right and is secured by a pin passed through the free end of the left blade and the shank of the right, and capable of being screwed into a perforation at the corresponding spot on the left shank. In this pattern there is a notable change in the handles. Instead of terminating in loops they terminate in hooks turned outwards. Now, although Dr Aveling regards this as the earliest of all their forceps, I am rather disposed to look on it as a later development. We do not know what was the latest form the forceps took on in the hands of this ingenious family. But Dr Hugh referred to them as hooks, and although it has been suggested that that "slim" gentleman purposely used the expression to mislead his readers,

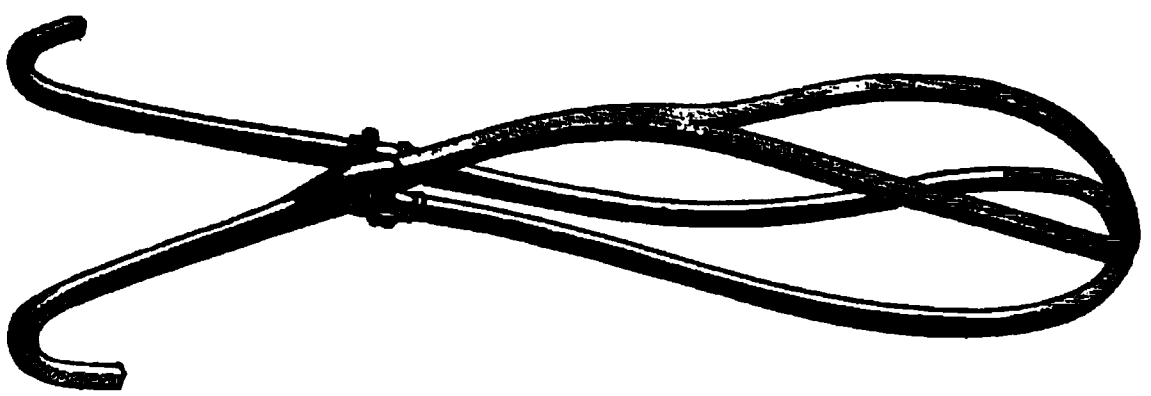

FIG. 6.—CHAMBERLEN'S FORCEPS WITH HOOKED HANDLES AND SCREW-PIN IN JOINT (FROM AVELING).

I rather think he was justified in the use of it. The likelihood is that they had actually come to use an instrument "contrived a double debt to pay"—to be used in general as a forceps, whilst in some cases of pelvic presentation or of head perforation the operator could use the curved handle of one or other of the blades as a blunt hook. Certainly when forceps first came to the light of day in the time of Drinkwater, Chapman and Giffard, the handles terminated in hooks turning sometimes outwards, sometimes inwards; and as regards the joint, Chapman tells that at first he used a screw pin to fix the blades, but that eventually he dispensed with the pin and fixed the sides by grasping them at the joint with one hand whilst he made traction with the other. The forceps which he figured in his second edition is of this construction. A forceps of somewhat similar pattern but having a different kind of lock may well have been the instrument employed by Dr Walker, the last

survivor of Dr Peter Chamberlen's obstetric progeny (Fig. 7). For William Douglas avers that this "Dr Walker pretended to improve Dr Chamberlen's forceps, but in truth spoiled them, by making them male and female." When Smellie came to apply his mind to the construction of the forceps he adopted and improved this kind of joint which has ever since been known by his name. As we part from the last of the gifted race, let me say that in having quoted De la Motte, I do not wish to be supposed to say "Amen" to his doom on them for keeping their secret to themselves. As Aveling reminds us,

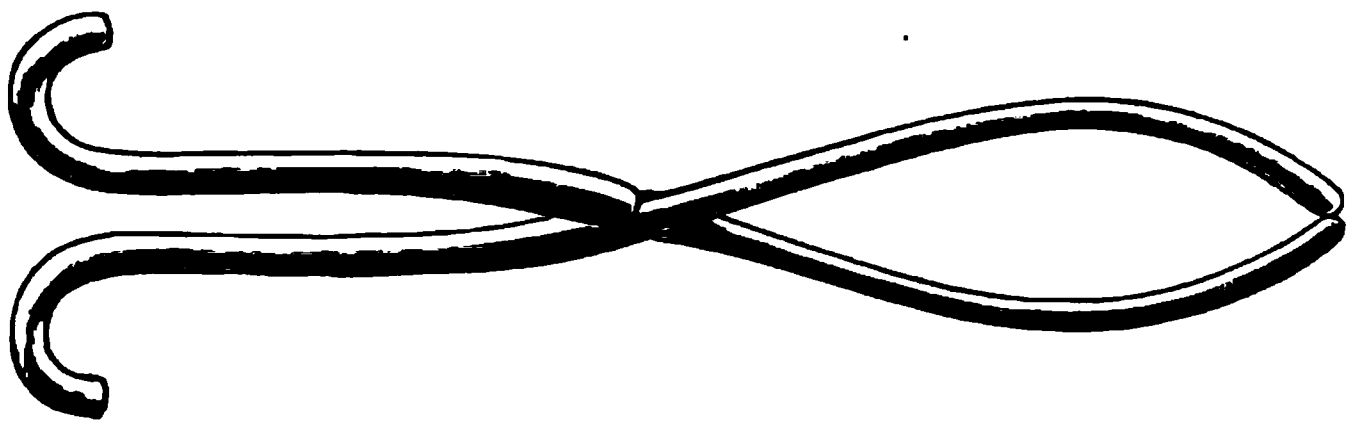

FIG. 7.—DR WALKER'S FORCEPS. FROM A PAIR IN EDINBURGH OBSTETRICAL MUSEUM.

various nostrums and secret remedies were in their days regarded as lawful sources of individual and family income; and indeed the altruism of the race is not yet so far developed as to have restrained a cutler who has recently modified the handles of the axis-traction forceps from taking out a patent for his design.

Minor Modifications of Forceps.

The forceps that emerged from their obscurity in the beginning of the eighteenth century have undergone two important changes. There are infinite modifications in minor directions. The Smellie Lock has almost completely replaced the Joint of the Chamberlen forceps in British practice, though that has been retained in modified forms in French forceps, whilst in Germany the Brunninghaüsen lock is preferred. This last was adopted by Dr Aveling in his forceps, and by Sir James Simpson in his cranioclast, as it is easily adjusted and holds securely—a notch in the right blade fitting over the stem of a button on the left. Again, whilst the French retain the

iron handles terminating in hooks, Smellie's followers and fellow-countrymen have had the handles shortened and made of wood, and in Germany, though the handles are of wood, they are furnished with traction hooks placed close to the lock. There are diversities also in the blades, which are sometimes non-fenestrated, or have the fenestra larger or smaller with broader or narrower rims, greater or lesser curves abutting immediately on the locks or separated from them by shanks of varying lengths. There were even some invented of entirely different construction, like the ingenious but very unserviceable forceps working like a lobster's claw, contrived by Smellie's contemporary and critic, Dr Burton of York. Burton is well known to have been the original of Sterne's Dr Slop, and when you look at his instrument you understand how, when he put his hand into his green baize bag for his forceps, he made the mistake of pulling out along with it, to the great amazement of Uncle Toby, the syringe which made that bachelor exclaim, "Good God! are children brought into the world with a squirt?"

The Chamberlen Curve.

But whatever minor variations there were in the blades, handles, or lock, the primitive forceps had only the one curve for adaptation of the blades around the fœtal head which is found in the Chamberlen forceps. Viewed from the side all these single-curved forceps are straight from the tip of the blades to the handle-ends. They are only capable of application to a head arrested near the parturient outlet. Our obstetrical forefathers who used them were men of boundless patience. They waited for hours after a head was lodged on the pelvic floor to see if what Johnson calls "a secondary labour" would not set in to complete its expulsion, before they thought of putting on forceps. They feared to shock the patient with the idea of an instrument, and Smellie tells how he pinned the upper sheet over his shoulders so that the forceps could be introduced under it without being seen. That they might make no noise he covered them with leather. He even sent a letter once to Professor Munro of Edinburgh along with a pair of wooden forceps which he had employed in three

cases. A small pair of forceps (Fig. 8) made of boxwood which have been in the Edinburgh Obstetrical Museum all this century are probably the identical pair. But while these straight forceps were available for extraction of a head lying on the perineum, they were found insufficient for cases where the head was arrested in a higher plane. Enlarging of the whole instrument, or elongation of the shanks, might allow the blades to pass further into the canals. But because the canals

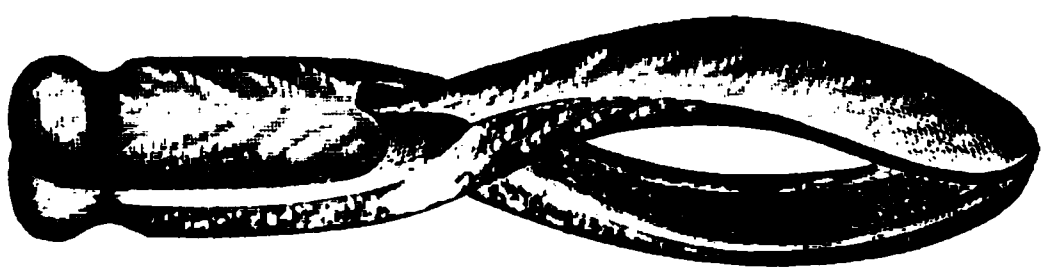

FIG. 8.—SMELLIE'S WOODEN FORCEPS.

are curved the head was caught only at the side next the sacrum and the forceps slipped; or if the points of the blades were carried forward to conform to the axis of the brim, the perineum was strained and torn. To adapt the blades to a curved canal they must have a pelvic curve.

The Levret Curve.

In 1754 Benjamin Pugh, surgeon at Chelmsford, published *A Treatise of Midwifery* with a plate of a well-curved forceps, in the preface to which he says: "The Curved forceps I invented upwards of fourteen years ago, made me by a man of Mr Archer's, Cutler, now living in Chelmsford. The preference between them and the common straight forceps, in every respect, is great." And in the body of his work he says they "are adapted in such a manner to the make of the passage that they can with ease be introduced into the body of the womb." Smellie also recognised the advantage of a pelvic curve and in the preface to his second volume, published in 1754, he says: "In my first volume, among the improvements and alterations that have been made in the forceps, I mentioned a long pair, curved to one side, which I contrived several years ago, for taking a firmer hold of the head in the pelvis when high; but I did not recommend the use of them, because

I was afraid of encouraging young practitioners to exert too great force, and to give their assistance too soon."

Before either Pugh or Smellie had published the account of their double-curved forceps, Levret in Paris had recognised the imperfections of the straight instrument. In January 1747, he presented to the Royal Academy of Surgery of Paris a new curved forceps, contrived for disengaging the fœtal head impacted in the pelvis and arrested at the brim, and in 1751 he gave to the world a full description and discussion of their value in a volume entitled, "Suite des Observations sur les Causes et les Accidens de plusieurs Accouchemens laborieux avec des Remarques sur ce qui a été proposé ou mis en usage pour les terminer ; et de nouveaux moyens pour y parvenir plus aisément." In this he demonstrates with perfect lucidity the defects of straight forceps—their inability to reach the head in the higher planes, their imperfect grasp of the head, their tendency to slip, their endangerment of the perineum. He shows how with the new curved forceps the head can be securely grasped even above the brim and safely extracted from any part of the parturient canal. He gives full instruction for the introduction and working of the instrument and especially as to the directions in which traction should be made. He says it is not only the most advantageous for the case for which he first designed it. "I dare even to maintain," he adds, "without fear of hazarding too much, for I am in a condition to prove it, that it is preferable in every respect to the straight forceps, even in the conditions most favourable for the latter." He was thus the first to publish a work on forceps with pelvic curve, and it was not only by his writings that Levret told upon the men of his time. Like Smellie, he was a great teacher, and not alone from all parts of his own country but from other lands pupils were attracted to his lectures, so that through them the employment of the forceps with the "new curve," as it was called, was at once widely extended. There was long controversy as to the superiority of the curved (called French) or straight (called English) forceps ; but in the end it became clear that the introduction of a pelvic curve added mightily to the power and usefulness of the instrument. The curve of Levret marks the first cardinal stage in the evolution of the midwifery forceps.

The Perineal Curve.

In 1769 Dr Robert Wallace Johnson, who had been a pupil of Smellie, published in London "A New System of Midwifery." He described and figured a forceps (Fig. 9) at the construction of which he had arrived after a series of experiments with instruments of other patterns. He had not heard of Pugh's forceps till in 1764 he was introduced to them by a cutler in Lombard Street, to whom he had gone to get his

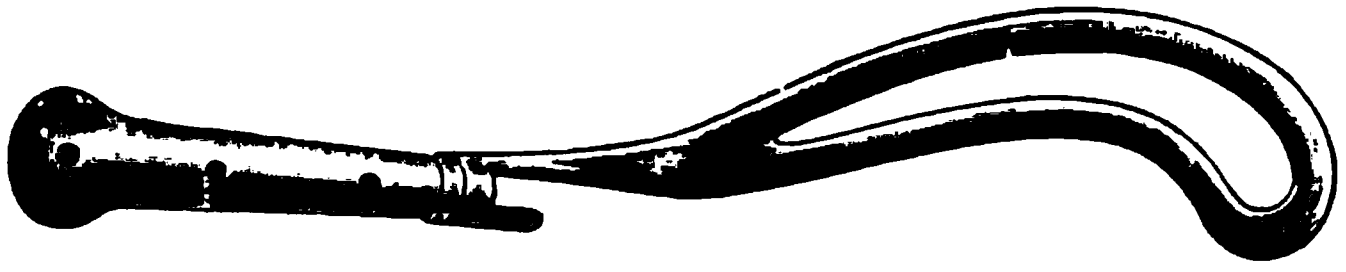

FIG. 9.—WALLACE JOHNSON'S FORCEPS, WITH PELVIC AND PERINEAL CURVE.

own instruments made. He saw that Pugh's embodied some of his own ideas and says, "they appear to me preferable to any of those which were published before them." As to his own, he tells us, "In the execution, my intentions were, *firstly*, that the large curves should correspond as nearly as possible with that of the pelvis; *secondly*, that their points should be thrown forwards, and made round, to prevent their hitching, or even pressing uneasily against any part of the pelvis, and likewise to maintain their hold of the head, whilst it is to be brought forward in that curved line of direction which nature observes;

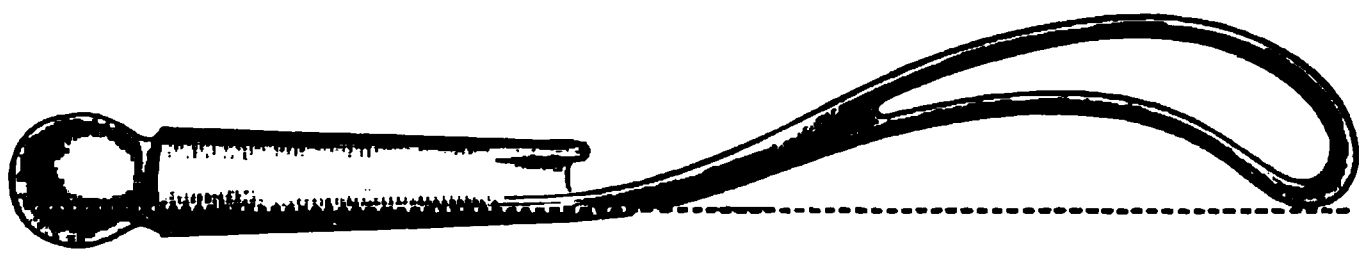

FIG. 10.—YOUNG'S FORCEPS, WITH PELVIC AND PERINEAL CURVE.

thirdly, that an inverted curve should be made towards the joints, whereby the perineum may be saved from injury, the extracting force rightly conducted, and the handles, at the same time, kept from pressing uneasily on the inferior and anterior parts of the pubes." This is the earliest notice of the "inverted curve" which has sometimes been called "perineal curve," with which various practitioners about the same epoch had their forceps made. The forceps (Fig. 10) used by my predecessor, Professor Young, who held the Chair of Midwifery in the

Edinburgh University from 1756 to 1780, has this perineal curve. An octavo set of Smellie's Anatomical Tables published in Edinburgh in 1792, has an "additional table No. XL.," showing "improvements which have been made in the obstetrical apparatus since the days of Dr Smellie." The forceps delineated is of this type, and the description is taken verbatim, but without acknowledgment, from Johnson. Dr Aitken, also of Edinburgh, who contrived various modifications of the forceps, and Dr Evans of Oswestry, had forceps made with a perineal curve; and most notable of all, Mulder, in his *Historia litteraria et Critica Forcipium* in 1792, after careful study of all the varieties of forceps, comes to the conclusion, that the properly constructed forceps should have not

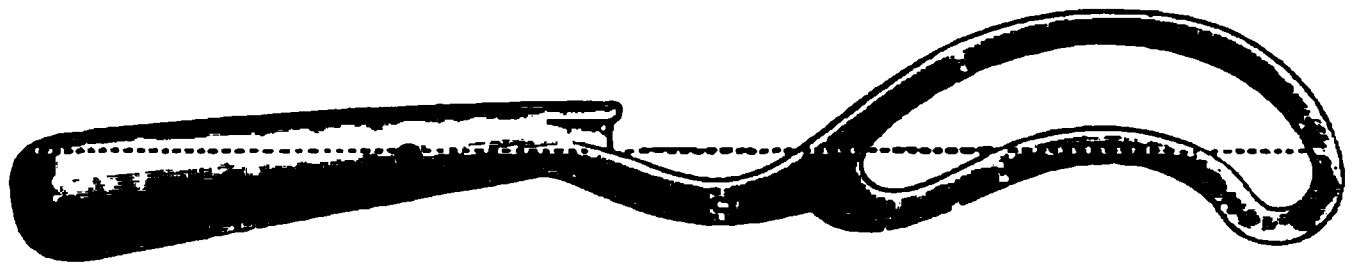

FIG. 11.—MULDER'S IDEAL FORCEPS.

only a cranial and a pelvic curve, but should be recurved near the lock, so that, as he figures (Fig. 11) in his plate of the ideal forceps, a line passing through the chord of the curve of the blades runs down through the extremity of the handles.

Imperfections of Double-curved Forceps.

It seems strange that the next clear step, therefore, in the evolution of the forceps was not already taken in the century during which so many minds and hands were at work on their improvement. But for some generations there was entertained a certain timidity in the use of the forceps. It was thought necessary to apologise for their employment. There was a tendency to secrecy in their application, and it was largely the short straight forceps, or small forceps with imperfect curves, that were made use of. Quite up to the middle of the nineteenth century even the practitioners who advocated the value of the double-curved forceps were apt to reserve their use for what were called "high forceps cases" and to content themselves with the straight instrument in the "low forceps cases" —and after all, these were the more frequent—where the head

was easily accessible. One result was that the value of the instrument was not fully appreciated, and the sphere of its application was painfully restricted. In the great Obstetrical School of Dublin, *e.g.*, Dr Clarke, master of the Rotunda Hospital, declared that he would rather cut off his right hand than apply forceps in a primipara, and when Dr Beattie adduced statistics in favour of the use of the forceps in labour, Dr Clarke replied by sending him a challenge to fight a duel.

It was not till after anæsthesia began to give the obstetrician greater freedom in the use of instruments that the full value of

FIG. 12.—LEVRET'S CURVED FORCEPS APPLIED TO HEAD IN PELVIC CANAL.

the long double-curved forceps came to be more fully recognised, and with the more frequent use there grew up a clearer idea of its imperfection as a tractor. In various schools it began to be seen that to get its full benefit it must be made not with a mere perineal curve but with a full compensation curve. There is a double fault in forceps with the Levret curve, because in making traction with them there is both loss of power and misdirection of force. Let us suppose traction is being made through the hooks of the Levret forceps represented in this diagram (Fig. 12) as applied to the head of the child in one of Braune's frozen sections. The central point of the head C ought to travel downwards in the direction of the line C D, along which it would be driven

by the natural parturient powers. But traction applied simply through the hooks *a* will act in the direction of the line *a* A C running parallel to the handles. Only a part of the power thus applied is available for dragging the head through the pelvis in the axis of the brim. If we resolve the force into its components, we find these constituted by the lines C E and C B. Of these the useful component C E in a case where a force A C of the weight of 50 lbs. meets the line of descent C D at an angle of 40° will be only 38½ lbs. There is a loss of 11½ lbs. And it is important to observe that whilst a force of only 38½ lbs. is acting in a useful direction a force of 32 lbs. is being exerted in a vicious direction, crushing the head against the symphysis in the direction and to the extent indicated by the line C B, and tending to cause the forceps to slide off the head. As the actual line of traction diverges further from the axial one, the amount of this detrimental pressure rapidly increases. Supposing the traction force is 50 lbs., if the line of traction meet the pelvic axis at an angle of 10° the detrimental pressure is 8·68 lbs; if at an angle of 30°, it is 25 lbs.; and if the angle be as much as 50° the detrimental pressure would be 38·30 lbs., while the available force would be reduced to 32·13 lbs.

Obstetricians had in various ways sought to overcome these drawbacks, as by tapes passed through the fenestral rims, or by instruments for pressing or pulling back the shanks while traction was made through the handles. For the most part they contented themselves with using the two hands simultaneously applied to the handles and to the neighbourhood of the lock or to the shanks, so that while one hand pulled the head downwards the other pressed it in a direction backward towards the hollow of the sacrum.

Steps towards Improvement.

Hubert, of Louvain, was the first clearly to demonstrate the disadvantages of the double-curved forceps. In 1860 he proposed to remedy their defect by having the free extremities of the handles bent back at a right angle, and in 1866 (Fig. 13), by fixing a bar to the handles close to the lock, through which traction could be made directly in the line of the chord of

the blade curve. In 1868 Dr Aveling laid before the London Obstetrical Society a pair of forceps the handles of which were recurved, so that viewed from the side, the instrument is seen to have a sigmoid shape; and in 1878 in a very able and interesting communication, he discussed the curves of midwifery forceps and demonstrated the advantages of an instrument made with what he called the "handle curve." In using his instrument he intended that the operator, while grasping the handles with one hand to keep them together, should make traction by pulling only through the extremity of the handles.

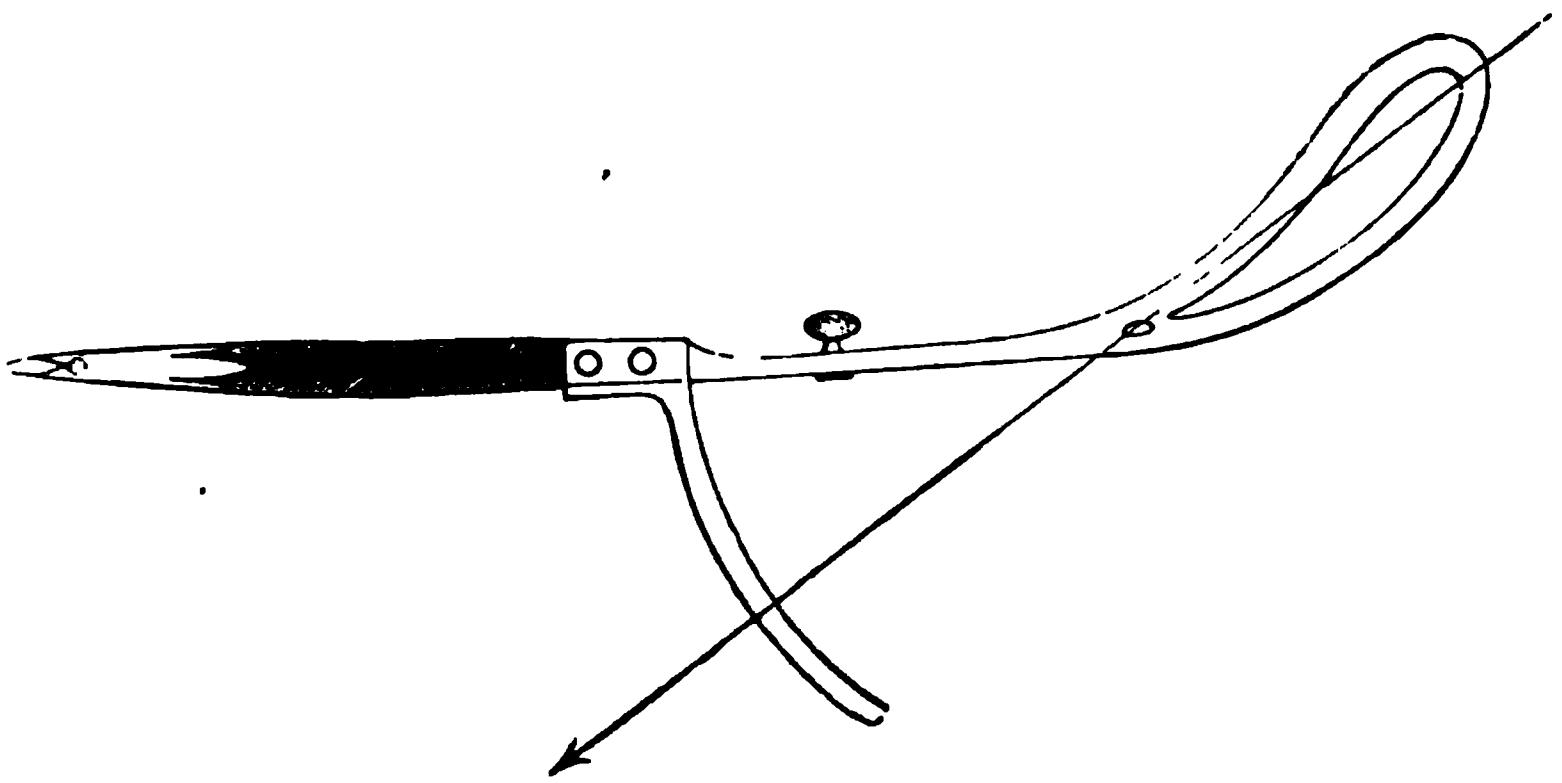

FIG. 13.—HUBERT'S FORCEPS, WITH COMPENSATORY TRACTION HANDLES.

Still the value of the compensation curve was not appreciated by the profession until a forceps was constructed easy of introduction, and giving the operator not only the power of axis-traction but a guide to the direction in which to pull. Paris, that saw the birth of Pierre Chamberlen, the inventor of the forceps with the cephalic curve, and that saw the establishment of the pelvic curve in the hands of André Levret, witnessed also the next important stage in the evolution of the compensation curve.

The Tarnier Axis-traction Forceps.

Etienne Stephane Tarnier was born in 1828 at Aiserey, near Dijon, where his father was the village doctor, and died in Paris in 1897, after a career of rare brilliance and beneficence. He made many improvements in our ways of dealing

with the troubles of pregnancy, parturition and the puerperium, and left behind him a noble school of younger obstetricians, inspired by his example and well trained to carry on the work of their beloved master. We owe to him our knowledge of the importance of the milk treatment of gravidic albuminuria. His name stands high, if not highest, among those who have worked for the lessening of puerperal mortality by his writings on aseptic midwifery and by his introduction of corrosive sublimate as the most powerful antiseptic. On various operative procedures he has made his mark, as, *e.g.*, in his substitution of the basiotribe for the cephalotribe. But above all else his name will ever be associated with the change that he effected in the construction of the forceps. It was in 1877 that he published the Memoir in which he demonstrated the necessity of the compensation curve and the possibility of obtaining the full

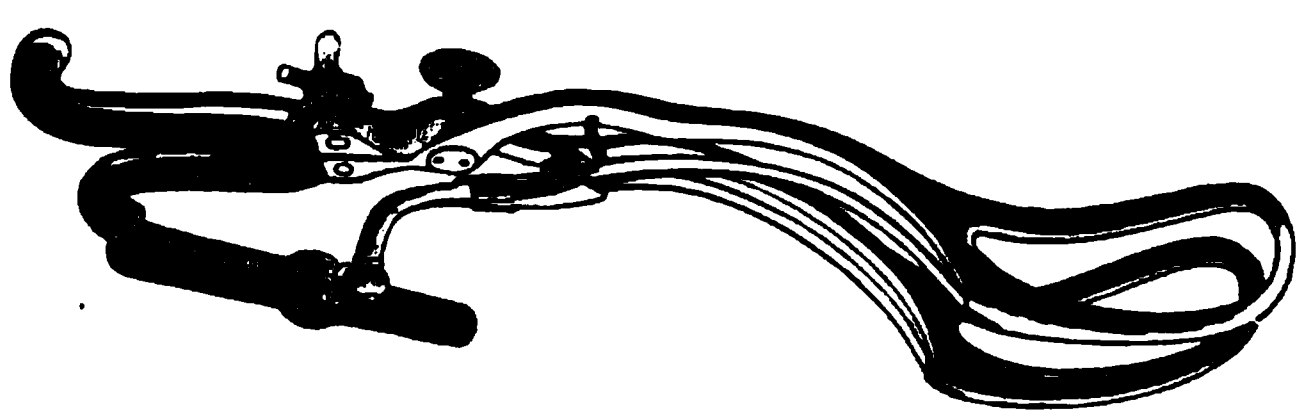

FIG. 14.—TARNIER'S "NEW FORCEPS."

value of it by means of curved rods jointed to the blades and pulled on by a traction-bar attached to their free extremities. A forceps so constructed is, of course, more complicated than the ordinary double-curved instrument. The handles that in the old instrument are used, first for application, and then for prehension and then for extraction, serve in the Tarnier instrument only for manipulation during the introduction of the blades. They are now simply the "Application-handles." After the blades have grasped the head they are kept in place by means of a fixation-screw placed just below the lock which serves to keep the handles in apposition. The application-handles are not touched after the adjustment has been effected. As the fœtal head descends in the grasp of the blades through the medium of the traction-handle or traction-bar with the jointed rods, the application-handles are free to descend in advance of the fœtal head and turn forward as the head moves round in the circle of Carus. This change

in the direction of the application-handles gives a constant guide to the direction in which at any moment traction should be made to ensure the onward progress of the head. The forceps (Fig. 14) which Tarnier recommended in his Memoir seemed to me, like French forceps in general, unnecessarily large and, further, unnecessarily complicated by having a perineal curve on the shanks. In 1880 I advocated the employment of forceps (Fig. 15) constructed on Tarnier's principle, and showed that the recurved rods with their traction-bar could be jointed to the best type of British forceps

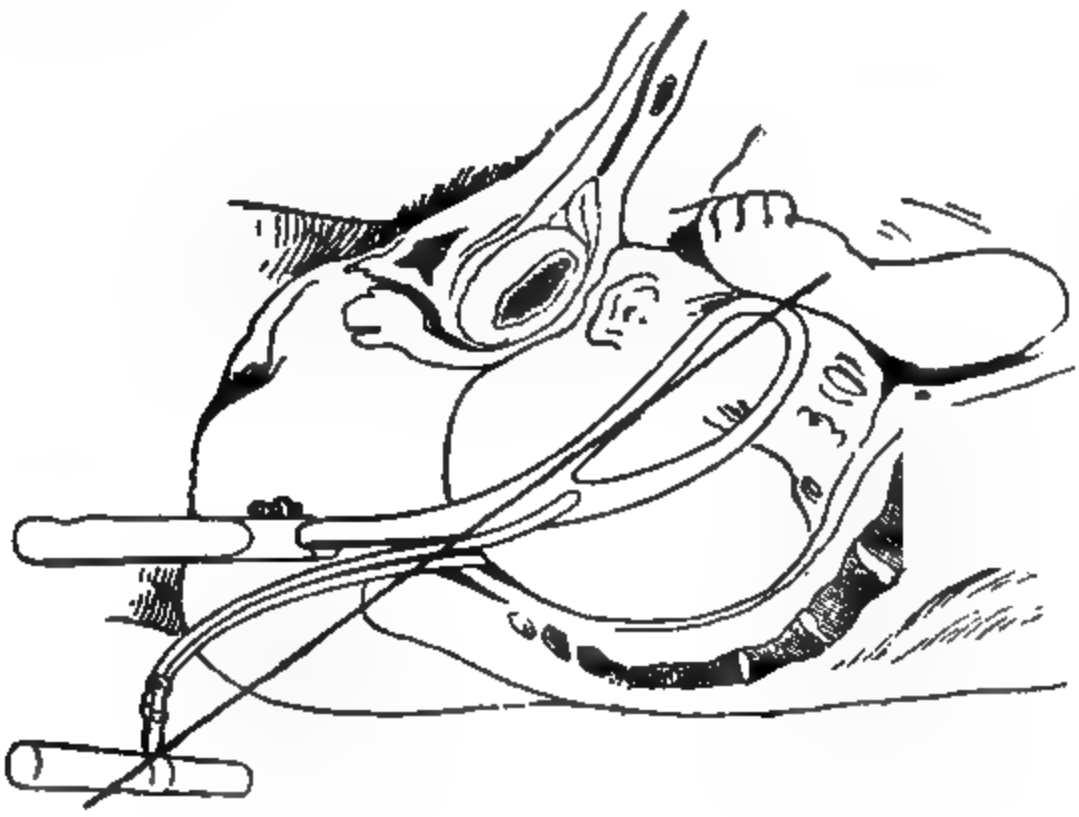

FIG. 15.—A. R. SIMPSON'S AXIS-TRACTION FORCEPS APPLIED TO HEAD IN PELVIC CANAL.

with the most satisfactory results; and at a later period Tarnier also had his forceps made with only a pelvic curve on the blades and a compensation curve on the jointed rods.

Possible Improvements and Assured Advantages.

There may be room for minor variations in all parts of these, just as we saw that there were many minor variations in the different parts of the single double-curved forceps. The rods hat were at first permanently attached to the blades may be made capable of separation for purposes of easier package or

more thorough sterilisation. The methods of adaptation of the traction-handle to the rods may vary. The fixation-screw may be of different size or in a different position. But the essential in what I have designated " Axis-traction Forceps " is that traction be made through rods jointed to the blades below their fenestra and having such a compensation curve that a straight line may run from the tips of the blades to the traction-bar at the other end of the rods. The experience of more than twenty years has shown with growing emphasis the value of Tarnier's traction-rods, and the advantages claimed for them at the first still holds good :—

1. All the force expended by the operator is useful. He wastes no energy in compressing or keeping the handles together while he pulls, and none of the pulling power is lost.

2. There is no unnecessary and injurious pressure produced on the maternal structures. The head is made to advance under the pull of this artificial *vis a fronte* in the very same direction as it would move under the impulse of the natural *vis a tergo.*

3. The head not being dragged by the forceps against the symphysis pubis, is not so likely to elude their grasp.

4. The transverse traction-handle gives a solid grasp and purchase for pulling by, and, in consequence of its power of moving in all directions, may be made to run parallel to the axis of the instrument at the close of the labour. It can be used in repressing the too rapid advance of the head where it is advisable to save the perineum from the risk of too rapid expulsion of the head.

5. The compression of the head in one direction, and the compensatory elongation in another, are not increased during tractions made through traction-rods, as they do when traction is made through the ordinary handles. The compression and moulding is altogether a closer copy of the natural configuration than is produced by the old forceps.

6. The rotation of the head is not resisted in any degree, and in the rare cases where it requires to be favoured or effected, the rectification of the position can be brought about by one hand grasping the application handles, while the other makes traction through the rods.

7. The direction of the application handles furnishes a

constant guide to the direction in which traction can be made with most effect. This is the most important advantage of the adaptation of jointed traction-rods to the forceps blades, and is of itself, to my thinking, enough to make it supersede the use of all the instruments that have perineal and handle-curves. To avail ourselves of it, it is simply necessary to keep the traction-rods constantly parallel to the shanks of the blades; and the proper line of traction is thus kept up whether the head be passing through brim, cavity, outlet, or vulva.

The complacency with which some of the forceps-improvers of the eighteenth century speak of their implement as now perfect, warns us against the danger of speaking as if we have attained finality. We do better to follow the example of Levret, of whom a contemporary said, "He confesses himself (for the encouragement of others) but little advanced on the way to excellence: from the stage he halts at, he would have others start for the goal of excellence." Of one thing, however, I am sure, that if a practitioner accustomed only to the use of the old double-curved forceps will use the axis-traction forceps in one or two difficult cases, he will find that they work with so much safety to the mother and child, and with so much ease to himself that he will ever after use them in every case. There is no case high or low, with presentation and position normal or abnormal, demanding forceps delivery where the axis-traction instrument may not be applied. Since it came into use the range of forceps application has been greatly widened, and the sphere of the competing operations, such as Turning, Embryotomy and Induction of Premature Labour has been correspondingly narrowed.

Frequency of Forceps Cases.

How frequently forceps are to be used in practice might be discussed at much length, and in the end the question would be determined by the personal equation. When I was Secretary to our Edinburgh Obstetrical Society some forty years ago we had a royal night when Dr Hamilton of Falkirk argued that labours ought often to be terminated by forceps, and stated that in his last 731 consecutive labours the children had all been born alive and every seventh

or eighth child had been brought into the world with forceps. Dr Figg, who practised in the contiguous parish of Borrowstouness, agreed as to the propriety of the speedy termination of labours, but his favourite method of interference was by turning. His patients attributed the speed with which he helped them through their trouble to the chloroform with which he indulged them. They would ask for "the stuff" as they expressed it, and whilst they were asleep he found it growingly easy to pass his hand into the uterus so as to lay hold of one of the limbs of the child and turn and pull it out. He was almost disposed to think that if nature had known that there was to be a skilled obstetrician at a parturient woman's bedside she would have made all the presentations pelvic, to save the necessity of the operator's hand going far through the cervix uteri. He had, like Dr Hamilton, an unusual series of deliveries effected in this way without any attendant danger or mortality. "The last ripe fruit from my own Figg-tree," he said, "was plucked in this fashion."

There was excess of interference on the part of both of these practitioners, especially in the practice of our Bo'ness brother. Still it is easy to understand that a man who has become familiar with the manipulation of an instrument that he knows to be safe in its application to mother and child, will feel justified in using it to save his own time as well as his patient's suffering, in a case where another man would for a longer time wait and watch the natural efforts.

Gideon Gray's Warning.

The life-like portrait of Gideon Gray might have been sketched from the character of Dr Thomas Anderson of Selkirk, near neighbour and friend of Sir Walter Scott. I once met at Abbotsford his son, Dr Henry, who died at an advanced age eleven years ago, and he told me that one day as his father and he were setting out on a long round of some fifty or sixty miles with the possibility of Henry being left in attendance on a shepherd's wife the father asked, "What's that ye're pittin' i' the gig, laddie?"

"It's the forceps."

"Did ye say your prayers this morning?"

"Yes, why do you ask that?"

"Why? My man! Because it's nae guid praying 'Lead us not into temptation,' if ye tak' forceps wi' ye tae a midwifery case."

The old doctor had a measure of right. Even this noblest of instruments may be abused; and as we carry it in our obstetric bag we may do well to say to ourselves what Gideon Gray said to the impatient father of Xilias de Monçada's child, "Nature must not be hurried, and she avenges herself of any attempt to do so." The best effects of the forceps are secured when we use them, not as a substitute for the efforts of nature, but as an aid where these are like to fail.

ORGANO-THERAPEUTICS, ESPECIALLY IN RELATION TO MENTAL DISEASES

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(*Continued from page* 413.)

Therapeutics.

The 130 patients treated suffered from the following varieties of insanity:—Congenital (1 cretinoid idiot, 1 epileptic imbecile, and 3 congenital imbeciles); pubescent (2 maniacs); adolescent (5 maniacs and 3 stuporose melancholiacs); chronic insanity originally "adolescent" in onset (9 dements, 1 monomaniac, 1 chronic maniac, and 1 folie circulaire); masturbational (4 melancholiacs); hysterical (2 melancholiacs); gestational (1 melancholiac); puerperal (5 stuporose maniacs and 3 melancholiacs); lactational (3 melancholiacs); chronic insanity originally "child-bearing" in onset (1 chronic melancholiac, 2 chronic maniacs and 2 dements); myxoedematous (2 melancholiacs); post-influenzic (3 melancholiacs); "phthisical" or tubercular (1 melancholiac and 1 maniac); syphilitic (1 melancholiac); alcoholic (8 melancholiacs); chronic insanity originally "alcoholic" in onset (1 dipsomaniac and 1 mono-maniac); general paralytic (7 patients); traumatic (1 melancholiac); idiopathic insanity, that is, insanity apparently due to bodily wear and tear and mental worry or shock and similar obscure causes (15 melancholiacs

and 7 maniacs); chronic insanity, originally "idiopathic" in onset (3 monomaniacs, 1 chronic maniac, 1 folie circulaire, and 1 dement); climacteric (18 melancholiacs and 4 maniacs); and senile insanity (4 melancholiacs).

The following table shows the results at a glance:—

Variety of Insanity.	Males.	Females.	Recovered.	Improved.	Unimproved.
I. Congenital (5) .	2	3	0	0	5
II. Pubescent (2) .	1	1	0	0	2
III. Adolescent (8) .	2	6	1 M.	3 F.	4
with chronic cases (12) . . .	4	8	0	2 F.	10
IV. Masturbational (4)	4	0	1 M.	1 M.	2
V. Hysterical (2) .	1	1	0	0	2
VI. Insanity of Child-bearing (12) .	0	12	4 F.	5 F.	3
with chronic cases (5) . . .	0	5	0	1 F.	4
VII. Myxoedematous (2)	0	2	1 F.	0	1
VIII. Post-influenzic (3)	1	2	0	0	3
IX. "Phthisical" (2) .	1	1	0	0	2
X. Syphilitic (1) .	1	0	0	0	1
XI. Alcoholic (8) .	6	2	0	5 (4 M. 1 F.)	3
with chronic cases (2) . . .	1	1	0	0	2
XII. General Paralysis (7)	5	2	0	0	7
XIII. Traumatic (1) .	1	0	0	1	0
XIV. Idiopathic (22) .	11	11	3 (1 M. 2 F.)	4 (3 M. 1 F.)	15
with chronic cases (6) . . .	3	3	0	0	6
XV. Climacteric (22) .	1	21	2 F.	6 F.	14
XVI. Senile (4) . .	0	4	0	1 F.	3
	45	85	12 (3 M. 9 F.)	29 (9 M. 20 F.)	89

Hence out of 130 patients treated, twelve recovered, twenty-nine were improved, and eighty-nine were unimproved. Twelve recoveries out of 130 cases is just over 9 per cent. If, however, the obviously incurable cases be eliminated, namely, the thirty "congenital" and "chronic" cases in the above list,

there remain 100 cases with twelve recoveries, or 12 per cent. of recoveries for all cases of insanity which were not hopeless, but were found to be intractable by ordinary methods. In the case of the forty-five males, if we eliminate the ten incurable cases, there remain thirty-five cases with three recoveries, or only 8·5 per cent. In the case of the eighty-five females, if we eliminate the twenty incurable cases and the myxoedematous case that recovered, there remain sixty-four cases with eight recoveries or 12·5 per cent. of recoveries of ordinary intractable insanity. My experience therefore indicates that the thyroid treatment of insanity is more efficacious in women than in men, and from the above table it will be seen that the best all-round results were obtained in the insanities connected with child-bearing. My results may thus perhaps indicate that the thyroid gland is functionally more active in woman than in man. Anatomists and physiologists inform us that the gland is somewhat larger in women than in men, and that it often enlarges during menstruation and pregnancy. I have come across no rational explanation of this physiological enlargement of the thyroid during menstruation and pregnancy, but would suggest that it is either a provision of Nature to supply more thyroid secretion for the development of the embryonic tissues in their earliest stages; or more probably that it is an expression of an increased maternal metabolism, affecting more particularly the uterus and also, in cases of pregnancy, the mammæ.

All the recoveries were test cases in the sense that previous treatment had been well tried, but had failed. None of them relapsed. The duration of asylum treatment before thyroid administration averaged eight months for the cases that recovered. The patients' ages varied from twenty to forty-six, but were mostly between twenty and thirty. The recoveries included one adolescent stuporose maniac (male); one masturbational stuporose melancholiac (male); three puerperal stuporose maniacs, one lactational simple melancholiac, one myxoedematous stuporose melancholiac, one idiopathic stuporose maniac, one idiopathic stuporose melancholiac (male), and one idiopathic simple melancholiac, and finally two climacteric simple melancholiacs. Hence as regards the mental states at the time of treatment of the twelve patients who recovered, eight were stuporose (five being of the secondary or maniacal

type, and three of the melancholic type), and four were in a state of simple melancholia. Large doses of thyroid were used in every case of recovery. I have had no case of recovery (except the myxoedematous patient) with small or moderate doses. This seems to indicate that it is the briskness and intensity of the metabolic reaction produced which is the valuable effect of thyroid in large doses in insanity, and I am inclined to think, from the clinical type of case which is most commonly benefited by thyroid, as well as from the condition of the urine during thyroidism, that the drug owes much of its value to its power of clearing out of the system various transition and probably toxic products of metabolism. All the patients who recovered reacted well to the drug, the test of the reaction being the loss in weight rather than the pyrexia, and more particularly the subsequent gain in weight. The average loss in weight was 7 lbs., and the average gain in weight afterwards was 14 lbs. in the patients who recovered, and usually the physical improvement preceded the mental, though sometimes these occurred concomitantly. Physical improvement was present in all the patients who recovered or improved mentally, and also in nine of these who were unimproved. It was evidenced in all cases by the subsequent gain in weight over that prior to treatment, and also in many cases by a healthier appearance of the skin. Five of the 130 patients treated who were either improved or unimproved by thyroid at the time, but who did not recover by its use, finally made good recoveries. They suffered respectively from adolescent, puerperal, alcoholic, idiopathic and climacteric insanity. This indicates that a patient who is not cured by thyroid may still recover by other means. At the same time, in my experience if a patient is going to recover by thyroid treatment at all, recovery will occur at the first administration of the drug in large doses. In twenty-two patients to whom the drug was given on more than one occasion, not a single recovery was secured. Thyroid extract at the same time has its uses in chronic insanity. Thus many patients who are becoming demented are temporarily improved in expression, talk, and habits. In folie circulaire I can corroborate the experience of Bruce,[1] who has found the drug useful in abort-

[1] Edinburgh Hospital Reports, 1900.

ing the maniacal attacks. No ameliorative or rousing effect occurred in one case in which I gave the drug during the melancholic phase, and in two recent cases of recurrent melancholia, in which there was a tendency to lose weight before treatment, the characteristic anabolic reaction was slow and prolonged, and only slight mental improvement occurred. However, in chronic mania of distinctly recurrent type I have found the attacks aborted by large doses of thyroid. The essential point is to give the drug early, before the attack becomes established, otherwise it is more likely to aggravate the storm than to calm it. In these cases also I think that thyroid probably acts by freely stimulating the metabolism and ridding the economy of transition and toxic products.

Parathyroid Extract.

The parathyroid bodies, four in number, one pair (inner and outer) being in relation to each lateral lobe of the thyroid gland, arise in development with the thyroid, but become differentiated from it later. For a long time after their discovery by Sandström in 1880 they were regarded as embryonic thyroid residues which could take the place of the thyroid in the economy either by vicarious action or by actual development into thyroid tissue. During the past four years, however, the experimental work, more particularly of Vassale[1] and Generali in Italy, of Gley in France, of Blumreich and Jacoby in Germany, and of Welsh[2] in this country, has drawn considerable attention to them, the Italian and French observers asserting that removal of the parathyroids alone gives rise to a group of symptoms (tetania) which are said to be the same as or similar to the acute neurotic effects of thyroidectomy in animals, whereas the German observers state that one and all of the parathyroids may be removed without ill effects. The experimental evidence is at present therefore very conflicting, but it raised the question that the activities of thyroid preparations might be due to an admixture of parathyroid, and so it occurred to me[3] that light might be thrown upon the matter from the pharmacological aspect by the administration of

[1] Italian Retrospect, *Journ. Ment. Sc.*, July 1897 and July 1898.
[2] *Journ. Anat. and Phys.*, Jan. and April 1898; and *Journ. Path.*
[3] *The Lancet*, 28th August 1898.

parathyroid extract which had not previously been exhibited in the human subject. The chemistry of the parathyroids is unknown. Disease of the parathyroids does not appear to give rise to symptoms other than those of local pressure, and the fact that the symptoms of parathyroidectomy in animals are relieved by thyroid extract certainly suggests that they may really be due to a damaged thyroid. The ox being the most convenient animal from which to obtain a sufficient supply of these small bodies, I had the freshly killed tissues (thyroid, windpipe and gullet) sent to me daily from the slaughter-house, and I dissected out the "external parathyroids" only, these being anatomically separate from the thyroid, and not, like the "internal bodies," incorporated with the larger gland. In the fresh state the external parathyroids of the ox weigh from half to one grain each.

Parathyroid extract was administered to three female patients, a case of phthisical insanity of the delusional mania type, a case of general paralysis, and a case of climacteric melancholia. In the first case the extract was given in the fresh and in the dried state by the stomach and in glycerin extract form hypodermically, in daily doses of from one to three glands in the case of each of the three preparations, the treatment being maintained for three weeks. In the second case extracts in glycerin, in sulphuric ether, and in 10 per cent. sodium chloride, were injected hypodermically, the daily doses in the case of each extract being equivalent to from one to four glands, and the treatment being continued for seven weeks. In the third case glycerin extracts were given hypodermically for a week, containing in each daily dose from one to nine fresh glands, or more parathyroid than would be found associated with two thyroid glands in the whole animal.

The *pharmacological effects* were practically negative, with the exception of a slight increase in pulse tension. There was no pyrexia, no loss in weight, no increase in the rate of the pulse or breathing, no increase in the urinary water, nitrogen or phosphoric acid, no mental change, in short none of the symptoms of thyroid feeding. In the third case the patient was given thyroid extract a few days later and reacted markedly to the drug, thus proving conclusively that thyroid extract does not owe its activity to parathyroid.

The *therapeutic results* of parathyroid in the three cases were negative, but the slight increase in the pulse tension suggests that it may act like the pituitary or the supra-renals in the economy.

Thymus Extract.

The thymus arises from hypoblast and mesoblast, but as development proceeds the hypoblastic elements ("concentric corpuscles") seem to be entirely overshadowed by the mesoblastic ("thymus cells"), and the mature gland practically consists of lymphoid tissue. The solids of the thymus (as in dry extracts) consist largely of proteids and proteid-like bodies. The proteids are mainly nucleo-proteids and so are rich in phosphorus, but cell-globulins and cell-albumin also occur. Nuclein or alloxuric bases, *e.g.* xanthin and adenine, are relatively more abundant than in other glandular organs. Iodine also is present. Thymus extract has been employed in exophthalmic goitre,[1] pseudo-hypertrophic paralysis,[2] lymphadenoma,[3] and other diseases, and in some of these cases an improvement in the physical condition of the patient has been reported, but apparently no specific effects have been observed.

I have administered thymus extract in tabloid form by the stomach in two cases of insanity, both males, one a case of idiopathic melancholia of resistive type, and the other a case of general paralysis. The doses given in both cases varied from 60 grs. (= 12 tabloids) on the first day, to 90 grs. on the second day, to 120 grs. on the third day continued for a fortnight, each patient receiving in all during this period 1590 grs. of the dry extract.

Pharmacologically.—In both patients there was evidence of an initial stimulation of katabolism during the first week, followed by an anabolic reaction during the second week of the drug. Thus during the first week, the temperature rose ½° F. in both cases; there was a loss in weight of 5 or 6 lbs.; the skin became less healthy-looking, the respirations were very slightly increased, and in the urine there was an increase in the urea and a slight decrease in the phosphoric acid in both

[1] Mackenzie, *Amer. Journ. Med. Sc.*, Feb. 7, 1897.
[2] Macalister, *Brit. Med. Journ.*, 1893, i., 1212.
[3] Robertson, *Brit. Med. Journ.*, 1894, ii., 800.

cases, and in the melancholiac there was very marked uraturia, due no doubt largely to the metabolism of the nucleo-proteid and nuclein contained in the dried thymus, a point to which attention has been drawn by Umber and Weintraud[1] During the second week both patients regained their lost weight and improved in physical appearance, and the pulse became softer.

Therapeutically.—In both patients there was distinct physical improvement, but no appreciable benefit mentally.

Pituitary Extract.

The pituitary body is developed from the epiblast, the anterior lobe, which has a somewhat glandular structure, arising from the buccal epiblast, and the posterior lobe, which is nervous in structure, arising from the neural epiblast. The evidence as to the rôle of the pituitary in the economy from the experimental, pathological, and therapeutic aspects is still conflicting and uncertain. Thus, according to different authorities, it is said to resemble the supra-renals in its physiological actions, to act like thyroid in its therapeutic effects in myxoedema and cretinism, and to play a distinct rôle in the pathogenesis of acromegaly. Its chemistry is imperfectly known. Its therapeutic effects in acromegaly are in no way specific, and at best merely ameliorative as regards the general condition. In mental diseases pituitary extract has been employed by Blair,[2] who gave it in "several cases of insanity, but as a rule with negative results"; also in two cases of myxoedema (one being improved and the other unimproved); and finally in a case of acromegaly with "persecutory mania," this patient receiving small daily doses for two months and becoming improved.

I have administered pituitary extract in tabloid form (each tabloid = 2 grains) in four cases of insanity, 3 males and 1 female, namely in one case of adolescent melancholia, one case of monomania of suspicion and persecution (originally commencing as an adolescent case), and two general paralytics (one of them the female case).

The daily doses employed varied from 24 grains to 72 grains and were continued for from one to two weeks.

[1] Schäfer's "Physiol.," *op. cit.*, p. 594.

[2] *Journ. Mental Sc.* 1899, p. 290.

Pharmacologically.—The temperature rose 1° F. in two cases; there was a slight initial loss in weight in three cases, and an ultimate gain in weight in all four cases; the urinary water was slightly increased, but the solids remained practically stationary; towards the end of treatment the pulse became stronger and the bowels more regular in the general paralytics.

On the whole the tendency to pyrexia and loss in weight with slight increase of water in the urine possibly indicated a slight stimulation of non-nitrogenous katabolism, and the gain in weight afterwards pointed to an anabolic reaction. The strengthening of the pulse and bowel action were possibly specific effects of the extract upon muscle, similar to the increased contraction of heart and arteries described by Oliver and Schäfer[1] as following intra-venous injections of pituitary decoctions.

Therapeutically.—All patients were unimproved mentally, but the two general paralytics were improved physically.

Cerebral or Brain Extract.

The brain arises from the neural epiblast and the mesoblast, the essential nerve elements developing from the neural epiblast, the neuroglia probably from both epiblast and mesoblast, and the vessels and membranes from mesoblast. Dried brain extract consists mainly of proteids (especially nucleoproteids), phosphorised constituents (*e.g.* protagon and lecithin), and cholesterin—the two former being most abundant in the grey matter, and the cholesterin in the white matter. Neurokeratin (especially in the neuroglia), nuclein, cerebrosides and other obscure nitrogenous bodies, and small quantities of extractives and inorganic salts are also present. Brain extracts have been administered with more or less benefit in various nervous diseases,[2] improvement being claimed especially in epilepsy, locomotor ataxia, chorea, and neurasthenia.

In mental diseases, brain extracts have been administered, but with indefinite results, by A. Robertson[3] who employed glycerin extracts and tabloids of sheep's brain given by the

[1] *Journ. Physiol.* 1895, xviii., p. 277.

[2] Brown-Séquard, *Brit. Med. Journ.*, 1893, i., 1213; Althaus, *Lancet*, 1893, ii., 1376.

[3] *Brit. Med. Journ.*, 1893, ii., p. 1319, and 1896, ii., p. 800.

stomach; by Ryan,[1] who used hypodermic glycerin extracts; and by Wilcox[2] who gave tabloids to four female epileptics, all of whom were improved, two of them becoming temporarily maniacal. Robertson is inclined to think that brain extract may act as a tonic in mild and early cases of neurasthenia and insanity.

I have administered cerebral extract in "tabloid" form by the stomach in 19 cases of insanity, 16 women and 3 men.

The daily doses varied from 15 to 90 grains (*i.e.* from 3 to 18 "cerebrinine" tabloids). Most patients received 60 grains a day for three weeks. The smallest quantity given was 360 grains in six days, the largest amount was 2,700 grains in sixty days.

Pharmacologically.—The temperature became subfebrile in half the cases; the weight was mainly unaffected, but in four cases it was at first slightly diminished and finally increased; four patients became temporarily more excitable; the total solids and urea were increased in the urine.

Hence dry brain extract tends to produce more particularly pyrexia and increase in urinary solids, indicating a slight increase in proteid metabolism which is possibly due to the richness of nucleo-proteid and nitrogenous matter in the extract.

Therapeutically.—The forms of insanity treated were as follows:—

- 4 Adolescent cases (1 melancholiac, 1 maniac, and 2 dements).
- 1 Puerperal stuporose maniac.
- 1 Lactational melancholiac.
- 1 Post-influenzic stuporose melancholiac.
- 1 Post-typhoid stuporose maniac.
- 1 "Phthisical" delusional melancholiac (a male).
- 2 Syphilitic cases (1 male melancholiac, and 1 female maniac).
- 1 Alcoholic maniac.
- 1 General paralytic.
- 3 Idiopathic cases (2 female maniacs and 1 male melancholiac).
- 2 Climacteric maniacs, and 1 senile maniac.

[1] *Brit. Med. Journ.*, 1894, i., p. 240.
[2] *Journ. Mental. Sc.*, 1899, p. 614.

Of these 19 cases, 14 were unimproved (including the 3 males), 3 were improved (all females with mania, adolescent, climacteric, and senile respectively), and two recovered (females). Those who recovered or improved mentally were also benefited physically, this being evidenced mainly by a gain in weight. Four of the patients who were unimproved mentally, gained slightly in weight after treatment. Of the two recoveries, one was an adolescent of 20, who at 19 became melancholic and stuporose, was unimproved by thyroid at the fourth month of her illness, became worse after influenza at the seventh month, menstruated and became maniacal after ovarian extract at the tenth month, remained in a state of simple mania till the eighteenth month, when she was given 900 grains of brain extract in fifteen days, during which there was a good subfebrile pyrexia ; during the following two weeks the mania subsided and the patient improved physically, recovered mentally, and remained well.

The other patient, aged 31, suffered from puerperal mania with stuporose and delusional features, was temporarily improved by thyroid at the fourth month, was given brain extract (945 grs. in fourteen days) at the eighth month, exhibited distinct azoturia during treatment, improved physically, and on the seventh day after the cessation of the drug, menstruated for the first time since her confinement, and recovery set in at once.

Choroid Plexus Extract (2 cases).

The *choroid plexuses* of the lateral ventricles of the brain arise from the mesoblast (their main substance) and from the neural epiblast (their epithelial covering). According to Findlay,[1] who adopts the rational views of Ford Robertson and Middlemass,[2] as to the structure of the pia-arachnoid, they are local developments of this membrane, and therefore essentially reticular connective tissue or "spongy lymph sacs" richly permeated with blood vessels, but he states that they are covered as a rule with stratified rather than with merely a simple layer of epithelium. It is probable, therefore, that chemically they will yield mainly the albuminoids, gelatin

[1] *Journ. Ment. Sc.*, 1898, p. 744; and *Brain*, 1899, p. 163.
[2] *Edin. Med. Journ.*, April and May 1895.

and reticulin. Findlay, however, considers that the choroid plexuses are actively secreting structures, their secretion being formed by actual transformation and disintegration of the epithelial cells and being discharged into the ventricular cavities.

I have administered the choroid plexus extract in "tabloid" form (each tabloid = 1 grain) in two male general paralytics. The daily doses varied from 10 to 50 grains, one patient receiving 100 grains in a week, and the other 300 grains in the same period. There were no pharmacological effects, except a temporary slight loss in weight in one patient, and therapeutically the results were negative, both patients being unimproved.

Supra-Renal Extract (4 cases).

The supra-renal bodies are said to arise from the mesoblast (the cortex), and from the neural epiblast (the medulla). Dried supra-renal extract consists mainly of proteids (especially nucleo-proteid and cell-globulin), various extractive bases, acids and salts, and an active principle for which the name sphygmogenin has been suggested. It is obtained only from the medulla of the organ, is a powerful reducing substance, and probably is essential to muscle metabolism—increasing the muscular contraction and tone of the heart and arteries more particularly, but also of the skeletal muscles. According to Swale Vincent[1] the active principle of the supra-renals acts peripherally upon the arteries, raising the blood-pressure, and centrally upon the motor centres of the brain (perhaps, however, per the cerebral arterioles), producing occasionally a preliminary motor and muscular excitation, but usually direct paresis and paralysis. He states that the active principle is very unstable, is rapidly altered and excreted, and so may be taken in large doses.

The exact rôle of the adrenals in the pathogenesis of Addison's disease is still uncertain, and supra-renal extract has not yielded decisive results in the treatment of the disease. Supra-renal extract has also been used in exophthalmic goitre, in diabetes, rickets and asthma, but undoubtedly its chief use as

[1] *Journ. Phys.*, Sept. 1897 and Feb. 1898.

yet has been as a local astringent and hæmostatic in ophthalmic and in nasal surgery.

I have administered supra-renal extract in tabloid form by the stomach in four cases of insanity, three males and one female: the daily doses varied from 15 grains (*i.e.* 3 tabloids) to 120 grains; the smallest quantity given was 400 grains in a week, the largest quantity was 4000 grains in six weeks.

Pharmacologically.—The temperature was lowered 1° F. in one case; the weight was increased in two cases; the pulse was diminished in frequency by about ten beats per minute and pulse-tracings gave evidence of increased blood-pressure; the total solids, urea, and phosphoric acid of the urine were all slightly diminished; and in one maniacal patient there was a distinct cessation of excitement during treatment, due, I think, partially to an apparent diminution of the metabolism by the drug and also to an increase in blood-pressure, for Maurice Craig[1] has shown that there is a tendency among the insane to a low blood-pressure in patients with mental excitement, and to a high blood-pressure in patients with depression.

Therapeutically.—The patients comprised 1 adolescent acute maniac who was distinctly improved, and 3 melancholiacs (1 adolescent, 1 idiopathic, and 1 climacteric) who were unimproved.

I think that supra-renal extract is worth a systematic trial in cases of acute maniacal excitement. The activity of its sphygmogenin seems to overshadow any actions of the proteid constituents of the dry extract when given in large doses, and my cases seem to indicate that supra-renal produces a specific diminution of tissue-oxidation in addition to its tonic contraction of the muscular walls of the arteries.

Splenic Extract.

The spleen arises entirely from mesoblast, being developed within the embryonic mesentery of the stomach. Dried spleen consists mainly of proteids (nucleo-proteids and cell-globulin), hæmoglobin and numerous extractives, bases, acids and salts. Splenic extracts have been tried, like these of bone marrow and

[1] *Lancet*, June 25, 1898.

lymph glands, in chlorosis, pernicious anæmia, and leukæmia, but the results have not been striking.

In mental diseases splenic extract has been administered by Campbell Clark [1] and by Bois and Kerr,[2] who employed liquid extracts given by the stomach and obtained 8 recoveries (4 stupor, 3 melancholia, and 1 mania) in a series of 22 cases (12 male and 10 female), and physical improvement in 17 cases.

I have administered dry splenic extract in tabloid form by the stomach in 2 female cases. The daily doses varied from 15 to 90 grains (*i.e.* 3 to 18 tabloids) continued for a fortnight, but amounted to 45 grains during the main period of the treatment in both cases.

Pharmacologically.—The temperature rose 1° F. in one case; there was a slight initial fall in weight in one case, but both patients gained in weight ultimately; the skin was flushed and increased in action in one case; the blood exhibited a 5 per cent. increase of hæmoglobin in both patients, an increase of hæmocytes and blood plates in one case, a slight decrease of hæmocytes in the other; the urinary water, total solids, and urea were all slightly increased.

On the whole, therefore, there was evidence of a slight stimulation of proteid katabolism followed by an anabolic reaction, effects in no way specific, but in my opinion accountable for by the nucleo-proteid in the dry extract.

Therapeutically.—Both patients, adolescent and climacteric melancholiacs, showed a slight temporary improvement, physically and mentally, but soon afterwards continued much the same as before treatment.

Orchitic Extract.

The testis arises from the mesoblast, its epithelium being derived from the specially modified or "germinal" portion of the lining of the embryonic body-cavity. Dried testis consists mainly of proteids (especially nuclein and nucleo-proteid), also of phosphorised constituents (*e.g.* protagon and lecithin), fat and cholesterin, and extractives and salts. According to Poehl of St Petersburg, the testis is also

[1] *Edin. Med. Journ.*, vol. iii. (New Series), 1898, p. 152.
[2] *Brit. Med. Journ.*, 1898, ii., p. 684.

said to contain an active principle called spermine, an animal alkaloid or base of a leucomaine nature, which is stated to be a powerful oxidising agent, and to be present in the semen, blood, and in other organs (*e.g.* thyroid and pancreas).

According to the Brown-Séquard school the testis contains an internal secretion (the aforesaid spermine) which produces important tonic and invigorating effects upon the physical, nervous and mental energies, or more precisely, upon the muscular and nervous systems.

Orchitic extracts have been tried with more or less reputed success in failing senility, debility from whatever cause, neurasthenia and nervous diseases generally, and apparently with more benefit in organic than in functional neuroses, the best results being claimed in locomotor ataxia and other spinal scleroses. Ameliorations have been reported in cases of disseminated sclerosis, Friedreich's ataxia, pseudo-hypertrophic paralysis, paralysis agitans, chorea, and hysteria; also in virile impotence, atony of bladder, Addison's disease, malaria, diabetes, pulmonary phthisis, scorbutus, furunculosis, psoriasis, and malignant disease of the skin. Physical improvement has been reported in many of the above cases, but if one reads between the lines aright, the fact of so common a benefit in such a heterogeneous group of diseases would suggest that the actions of testicular extract are not in any way specific.

Orchitic extract has been administered in mental diseases, especially in cases of melancholic stupor, but with indefinite effects. Bogroff of Odessa[1] gave hypodermic injections of rabbits' testicular extract in sixteen cases of insanity, of whom two recovered (a stuporose melancholiac and a delusional maniac), and fourteen were unimproved, although several of the latter were benefited physically. A. Robertson,[2] however, found no effects, physical or bodily, produced by hypodermic injections of the Brown-Séquard fluid in two cases. Wilcox[3] gave tabloids to ten male epileptics, all of whom were unimproved, most being temporarily excited, and showing only a slight physical reaction.

I have administered dry orchitic extract in tabloid form

[1] *Med. Ann.*, 1892, p. 71, quoting from the *Vratch*, 1891, No. 14, p. 367.
[2] *Brit. Med. Journ.*, 1894, ii., p. 800.
[3] *Journ. Ment. Sc.*, 1899, p. 614.

by the stomach in eight cases of insanity, four males and four females. The daily doses varied from 15 grains (=3 "didymin" tabloids) to 120 grains, continued in six cases for a fortnight, during which the patients received from 600 grains to 1560 grains in individual cases; and for a month in the remaining two cases, one senile patient receiving 2660 grains during this period, and the other (a castrated male) 3240 grains.

Pharmacologically.—The temperature became subfebrile in five cases; the weight in four cases was at first diminished, and then increased; in one case the pulse became stronger and the action of the bowels became more regular; menstruation was unusually profuse in one female adolescent. In two male cases, one of whom had been castrated, and the other of whom had an undescended left testis and a rudimentary right testis, the initial loss in weight amounted to 7 lbs., and there was a distinct increase in the water, total solids, urea, and especially in the phosphoric acid of the urine; and in the other cases the increase in phosphates was usually present, though less marked. Mental excitement occurred in two general paralytics, a male and a female, amounting in the latter to temporary acute mania. This is interesting in connection with the statement by Venturi[1] that in general paralytics the testes and ovaries are commonly atrophic, the degree of atrophy varying directly with that of the brain.

Therapeutically.—The patients treated were: 1 post-influenzic and adolescent stuporose melancholiac (female); 2 general paralytics (1 female, 1 male); 2 climacteric maniacs (females); 1 senile and alcoholic melancholiac (male) becoming debilitated and demented; and 2 chronic cases (males), one of whom, aged 45, had an undescended left and a rudimentary right testis, and had been ill for 14 years with monomania of suspicion and unseen agency; while the other, aged 41, had been ill for 24 years, he having suffered from masturbational insanity (chronic melancholia) since his youth, and having been castrated without benefit at the age of 24. These two patients were slightly improved mentally, so was the stuporose case. The other patients were unimproved mentally, but two of them, as well as the three previous cases, were improved

[1] Italian Retrospect, *Journ. Ment. Sc.*, 1894, p. 447.

physically, this being indicated mainly by a gain in weight as compared with that before treatment.

Ovarian Extract.

The ovary arises from the mesoblast, its essential epithelial elements, the ovisacs and ova, being derived from the specially modified or "germinal" portion of the lining of the embryonic body cavity. Dried ovary consists almost wholly of proteid and allied bodies, the ova and ovisacs being composed mainly of nuclein and nucleo-proteid, but also of cell-globulin and cell-albumin, and the stroma yielding the albuminoids mucin and gelatin. According to Poehl the ovary also, like the testis, contains spermine. Brown-Séquard and his followers state that "ovarian fluid" is a tonic to the nervous and muscular systems, acting similarly to orchitic fluid, but not so powerfully.

Ovarian extracts have been found beneficial in the failing senility of women; in the various disorders (*e.g.* neuroses, obesity, etc.) of the climacteric, whether natural, premature, or artificially induced; in amenorrhœa and other functional disorders of the female; in chlorosis, thyroid insufficiency, exophthalmic goitre, epilepsy, hysteria and diabetes.

Ovarian extract does not appear to have been much employed in mental diseases. Buschan in his recent work on organo-therapy only refers to seven cases, of whom three were cured. Wilcox[1] gave tabloids to five female patients who were amenorrhœic as well as insane. Menstruation was re-established in four of the patients, of whom one recovered (an acute maniac of 18) and three were improved (a maniac of 19 and two melancholiacs of 20 and 33 respectively). The fifth case, a melancholiac of 43, was unimproved.

I have administered dry ovarian extract in tabloid form by the stomach in 36 female cases, the daily doses varying from 15 grains (= 3 tabloids) to 120 grains, continued usually for from two or three weeks, but from one week to ten weeks in the various cases. Most patients had 600 to 1200 grains in the two or three weeks. The largest doses were given to a castrated female who was treated on two distinct occasions, she receiving 2200 grains in ten weeks the first time, and

[1] *Journ. Ment. Sc.*, 1899, p. 614.

3470 grains in a month on the second occasion three and a half years later.

Pharmacologically.—The temperature was raised 1° F. in a third of the cases; the weight in the majority of cases was temporarily diminished and then regained and finally increased during the taking of the drug or shortly after it; the hæmoglobin and hæmocytes of the blood were sometimes slightly increased, sometimes slightly decreased: the pulse-tension was commonly increased; the bowels in a few cases became more regular; menstruation was occasionally more profuse than usual at the regular periods, in five cases it occurred irregularly, and in one case it re-appeared fourteen days after the cessation of treatment, having been in abeyance for eight months. Mental excitement occurred in a third of the cases, and two prematurely senile women became distinctly more vigorous.

The *Urine* showed a slight increase in total solids, affecting the phosphates more than the urea. This was especially seen in a patient who had previously had her ovaries removed, indicating a considerable increase in the oxidation of phosphoric acid. Curatulo and Tarulli of Rome [1] have also noticed the increase of phosphoric acid by exhibition of ovarian extract in castrated females, and they give it as the explanation of the beneficial effects of oöphorectomy in cases of osteomalacia, the removal of the ovaries admitting of a greater deposit of phosphates in the bones.

Therapeutic Effects.—The thirty-six female cases included one congenital imbecile, two pubescents (one an epileptic), five adolescents, one post-connubial stuporose melancholiac, one lactational maniac, two post-febrile cases, two alcoholics, two general paralytics, four idiopathic cases, eleven climacterics, three senile melancholiacs, and finally two chronic cases, a melancholiac who had cystic disease of both ovaries, and a maniac who had been previously castrated. Two of these patients made a recovery long after treatment, and probably independently of it. Four cases, mainly stuporose, were temporarily improved, the others were unimproved. Twelve of the patients, including the four who were improved mentally, gained in weight after treatment, and so were benefited physically. The patient whose ovaries had been removed, and the patient

[1] "Trans. Edin. Obstet. Soc.," 1895.

whose ovaries were absolutely destroyed by cystic disease (as was confirmed by *post-mortem* examination eventually), both had ovarian extract in enormous doses, but showed no mental change and were unimproved. Three patients, however, did react dynamically. One, an epileptic of fourteen, who was given 765 grains in fourteen days, took four epileptic fits on the last four days, and then passed into a state of severe epileptic mania with rigidity of the limbs, loud screaming, and much mental confusion. This lasted three days and then she became her usual self again. Another, a climacteric excited melancholiac of forty-six, of prematurely senile appearance, became distinctly more vigorous physically and more excited mentally. The third, a prematurely senile woman of fifty-five, melancholic and extremely debilitated, received 1350 grains in forty days, became physically so strong that she raised up on its end the bed which she had hitherto been unable to leave, and mentally she became acutely maniacal and has remained a chronic maniac for four years.

Uterine Extract.

The uterus arises from mesoblast, being derived from a thickening and invagination of the epithelial lining of the embryonic body-cavity. Dried uterus consists mainly of proteids (especially globulins and albumins), and of gelatin, fat, extractives, and salts.

I administered uterine extract in tabloid form in a case of puerperal mania which had subsided in severity, but was becoming stationary and relapsing in tendency. Doses of 45 grains continued daily for a fortnight, were accompanied by a rise in temperature of nearly 1° F., and a loss in weight of 2 lbs., both of which effects were undoubtedly attributable to a bout of mental excitement which set in during treatment and was due apparently to the natural course of the disease and not to the drug, which seemed to be inert. The therapeutic effects of uterine extract were negative, but the patient made a good recovery two months later when menstruation became re-established.

Mammary Extract.

The mamma arises from the cutaneous epiblast. Its solids consist mainly of proteids (especially a nucleo-proteid), of the precursors of the casein and lactose of milk, and of extractives and salts. Mammary extract has been found to improve the general health and the local condition in uterine fibroids.[1] I administered mammary extract in tabloid form to two patients, one a puerperal maniac, who had become stuporose and stationary, and the other a lactational maniac, still in the acute stage. Daily doses of 15 to 120 grains continued for ten days, were accompanied by a rise in temperature of nearly 1° F., by slight loss in weight in both cases, and by a slight increase in the urinary urea in the puerperal case, but by no changes in the blood, pulse, respirations, or in the mental condition in either case. Both patients, however, eventually recovered, the puerperal case three months later after a course of thyroid treatment, and the lactational case six months later.

General Conclusions.

Brown-Séquard's generalisation, that "all glands and all tissues have an internal secretion; all injected subcutaneously have a tonic effect," undoubtedly requires modification. My investigations in the insane lead me to conclude that those animal extracts which consist mainly of simple proteids (albumin and globulin) and albuminoids merely have a dietetic value; but that those animal extracts which are rich in nucleins and nucleo-proteids produce, when given by the stomach in sufficiently large doses (as 60 grains daily of the dried extract and upwards), a temporary stimulation of cell-katabolism with a subsequent anabolic reaction, this being evidenced by the common increase of the water, total solids, urea, and phosphoric (and uric?) acid of the urine, by the general tendency to a subfebrile pyrexia, and perhaps most importantly of all by the initial loss in weight followed by a gain. This initial katabolic stimulation with its resultant anabolic reaction is in my opinion the explanation of the physical improvement or "tonic effect" which occurs in a fair proportion of cases (usually under 50 per cent.), and which if pronounced may be accompanied by mental improvement and even by mental recovery. In this

[1] Sholer, *Amer. Journ. of Obstet.*, Feb. 1899.

sense, therefore, these substances may be termed *metabolic tonics*, and it is probable that in the living body those organs (cellular) which are naturally rich in nucleins and nucleo-proteids produce, in virtue of the metabolism of these substances, similar distant "tonic" effects upon the general cell-metabolism. In the administration of animal extracts in disease generally I think it of the utmost importance to recognise the fact that many of them (apparently those rich in nucleins and nucleo-proteids) may produce this tonic effect. It explains many of the discrepancies in the results obtained by various workers in the various fields of disease, and it should save one from the fallacy of attributing to various extracts specific effects in diseases in which, *à priori* on the "internal secretion" hypothesis, their use seems to be specially indicated, these effects being in reality the general tonic effect of a certain group of animal extracts. Apart from the general tonic effect upon cell-metabolism, it is extremely doubtful whether each organ possesses a specific internal secretion in the sense intended by Brown-Séquard. Some organs probably have such an "internal secretion," for example, the active principle (sphygmogenin) of the supra-renals which powerfully increases muscular contraction and apparently diminishes tissue-oxidation. So also the thyroid has an active principle (iodothyrin), whose specific effect is to stimulate katabolism or tissue-oxidation, for in this respect thyroid extract stands far above all others, and when it is administered in large doses the anabolic reaction never sets in until after the cessation of the drug; whereas in the case of all the other "metabolic" extracts which have been used by me, an anabolic rebound generally sets in during the continuance of the drug.

FOUR CASES WITH AFFECTIONS OF MULTIPLE ABDOMINAL ORGANS[1]

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AFFECTIONS of several abdominal organs simultaneously are by no means so rare as their diagnosis is, and a good many cases

[1] Read before the Forfarshire Medical Association.

of multiple tumour also have been published, but having had the fortune to meet during the past year a series of patients with simultaneous but isolated conditions which I have investigated surgically, I thought it might interest the members to give a short résumé of the histories, and exhibit some of the specimens.

Medullary Cancer of both Ovaries; Pelvic Cyst.

1. Mrs M. (48), widow, was sent to me from Forfar with abdominal tumour, which she had noticed for about a year, and which had pained her greatly for a month. She was admitted to my ward on 29th July 1899. She had had five normal labours, the last being nine years ago, and her periods had gradually become more scanty, and had stopped for nine months. The centre of the abdomen was occupied by a tense fluctuating tumour, which extended above the umbilicus, and could be traced into the pelvis, where it seemed to enter on the right side. On 2nd August I made a cœliotomy, and found that the tumour was a large cyst with solid nodules, evidently malignant, and extending by a thick cord up into the left lumbar region. The left ovary and tube very closely attached to it. Having ligatured off the pedicle at the uterus I dissected out the lumbar extension, but, as an examination of the specimen afterwards showed, I had not got beyond the upper end. On examination of the right ovary I found it enlarged to the size of a tangerine orange, and removed it. I then passed my hand into the pouch of Douglas and pulled up and removed a thin-walled cyst four inches in diameter tacked to the back of the right broad ligament.

The abdomen being now cleared I found secondary nodules in the peritoneum of the abdominal wall, and behind the uterus, too numerous and too minute for any treatment.

The aftercourse was uneventful. The stitches were removed on 12th August, and on 22nd August the patient went home. The microscopic examination of the tumours showed medullary cancer in both ovaries, and the prognosis of early recurrence which I gave was justified by her death a few weeks later.

Left Ovarian Cyst; Right Hydrosalpinx; Encysted Appendix Vermiformis.

2. Mrs C. (36) was admitted to my ward on 3rd July 1900 complaining of abdominal swelling which she had noticed for three weeks. She had two children and a miscarriage in her first marriage. There was an elastic swelling on the left side, extending beyond the mid line. The abdomen was, however, fairly uniformly distended, and the percussion note was dull over the whole front of the lower abdomen and in the right flank. On operation I found the abdomen full of yellowish colloid material, which lay between the intestines and extended up under the liver. On the left was a multilocular cyst which was found ruptured near the pedicle. It was clamped with the angiotribe and removed. The right Fallopian tube was full of brownish fluid and was removed. On passing my hand again into the abdomen I found a tense sausage-shaped swelling attached to the cæcum. Its contents could not be expressed, so I incised it, and gave issue to some tough gelatinous matter, partly clear and partly white. I then incised the peritoneum at its base and dissected it off from the bowel, which was, however, opened in doing so. The half-inch long opening was sutured, and the peritoneal cavity profusely douched with water. Six days afterwards the temperature rose to 101, and there was suppuration of the wound, which took some time to subside. On 5th August I found fulness in the right flank up the whole course of the ascending colon. By 29th August the swelling had almost disappeared, and patient was able to get up, and on 11th September she went to the Convalescent Home.

Gall Stones; Cystic Left Ovary; Retroflexion of Uterus; Right Femoral Hernia.

3. Mrs D. (46) has been under my care for the last seven years. She has had four children, and in November 1890 her last pregnancy ended in abortion at the third month. In 1893 she was complaining of pelvic discomfort, especially in the week preceding her period, and had worn a vaginal stem for prolapse.

She was a thin and poorly-nourished woman, and I found the uterus not prolapsed but retroflexed, and she had much trouble from a small right femoral hernia. A truss relieved the hernia, which, however, on one occasion a year later I had to reduce under chloroform. A ring pessary was found to give the best relief to the pelvic discomfort, and she managed to get along till last year fairly well. At one of her periodical visits for the cleansing of her ring I found a cystic swelling behind the retroflexed uterus. It was very difficult to move, and I was pressing it pretty firmly when it gave way in a manner that left me with the impression that it had ruptured, and for a day or two I had uncomfortable anticipations, which were not realised. On 31st December 1899 she came complaining of discomfort and dragging at the upper part of the abdomen, of occasional faintness, and of two months' amenorrhœa. I found the uterus still retroflexed, and apparently enlarged, but not so much as to correspond to two months' pregnancy. To the right of the umbilicus was a tumour very freely mobile, and resembling a kidney in size and consistency so much that it was difficult to think of anything else. It could be pressed into the hypochondrium and across the spine. I was, however, convinced that I felt the kidney in its normal situation. In this Mr Greig agreed with me, but later, when the patient was in my ward, there was much diversity of opinion on the point. The patient had been getting thin and felt the pressure of the truss very irksome, and I determined to open the abdomen, examine, and probably remove the tumour, which I thought was attached to the bowel, reduce the flexion of the uterus and close the hernial canal. On February 22, 1900, making an incision over the tumour I found it to be a distended gall bladder with several stones. I incised it at the apex and removed the stones, and about four ounces of dark thick bile, and then sutured the opening and dropped the bladder back. I then released the adhesions which were mooring the uterus, and finding an egg-sized cystic left ovary I removed that. The hernial canal I then pulled up extraperitoneally, and closed with a silkworm suture which I then buried, and closed the abdominal incision. The convalescence was complicated with a transient cystitis, but otherwise satisfactory, and the patient put on flesh and kept fairly comfortable till now, when she is passing through an attack

of biliary colic with jaundice. Besides the stones which I removed, the lowest of which was impacted at the neck of the gall bladder, there was probably another which I could not reach. In her previous history there was no point giving a suggestion of biliary colic, and in particular no jaundice. Since making this report I have treated the again distended gall bladder by loading it with a bag of shot, and the result has been surprisingly successful, as the distension is gone, the bladder is scarcely palpable, and the patient once more is free from the dragging and the colic which it caused.

4. The fourth case was one in which I removed uterus and right ovary for tumour, but as it seems likely to prove a case of malignant deciduoma, a more detailed report will be necessary, and the case would be removed from the category under which I have ranged the others.

ANGINA LUDOVICI: A FAVOURABLE CASE

By J. TREGELLES FOX, M.R.C.S., etc.,
Strathpeffer Spa

I HAVE only seen an occasional case of this disorder[1] amongst out-patients in Madagascar and in England, and have not before been able to watch the course and termination of any. As the disease is not common the following record may be of interest to some.

W. S. M'K., 15, a town-bred boy living a healthy country life. At the rural festival of ploughing-match and hockey games, etc., March 3. The day was fair but rather damp and overcast. Took ill at once with "cold," sore throat and shivering, and next day the swelling, stiffness and pain came on; the tongue being so raised that he was unable to open mouth wide, swallow food, or even talk.

Present state, March 5.—A very intelligent and patient lad. The whole sub-maxillary regions seem involved in a tender, elastic, resistent swelling, about symmetrical; a good deal like

[1] Allbutt's description of this malady briefly is:—Phlegmonous cellulitis of the neck, a septic inflammation with hard swelling under the tongue, and localised brawny infiltration beneath the jaw; commonly suppurating, sometimes gangrenous; a very severe and often fatal disorder.

the beginning of mumps in the sub-maxillaries, but the parotids seem not affected. Though some diffuse swelling extends to the ears, it does not *specially* occupy the gap between the bones, nor mark out the portion upon the masseters as in inflammation primarily affecting those glands. No redness of skin, and no enlarged lymphatic glands to be made out. Tongue very much raised, and somewhat enlarged also. A slight amount of dental caries, but no alveolar mischief present. Throat, some whitish exudation near the tonsils. Moderate fever, considerable cough, headache, etc. No laryngeal dyspnœa.

Course.—The signs increased, and the pyrexia, etc. reached their height on the third or fourth day of the disease, when the floor of the mouth was coated by a thick white *false membrane*, closely, but not firmly, adherent to the red but not eroded mucus membrane, and returning daily after removal under the douche. The swelling also extended more to the left side (or began to decline first on the right); and the left parotid gland seemed to be invaded, *ab extra*, in its deeper portion. Nothing abnormal could be made out in the salivary ducts, nor did the secretion of saliva seem to be painful. All the symptoms declined somewhat under treatment, and about the seventh day free relief by suppuration took place. Convalescence was established in a fortnight, though for other two weeks he required care and had some stiffness remaining about the left masseter even longer.

Treatment.—Medicinal.—Tincture of iron with liq. ammon. acet. and glycerine, large doses. Phenacetin and ammon. bromid. for headache. Grey powder and rhubarb followed by castor oil. *Local.*—Frequent antiseptic irrigation, and salicylic gargle; warm sponging of the whole face and neck, and poultice from ear to ear. Of course he was fed frequently with liquid food, milk and beef tea, which he took bravely, though with great pain and distress, and in very small portions, for several days. A *little* port wine was also given. *Surgical.*—As soon as the swelling began to localise on the left side, a deep puncture with sterilized tenotome was made in the floor of the mouth near the canine tooth. Only some blood came, but two or three days later free vent was given to pus apparently in the track of it. During the next few days, the area from the front of the ear and extending down below and

within the jaw, which became soft and fluctuating, continued to discharge laudable pus, without shreds or curds, through the same narrow opening and a tortuous channel which apparently wound round the jaw at about the site of the facial vessels. There was no other opening, none even internally in the cheek.

A specimen of the (first flowing) pus was sent to the West of Scotland Clinical Research Laboratory; and Dr Leslie Buchanan reported on it as follows:—

"The cellular portion of the pus is composed of pus cells. There are very large numbers of micro-organisms present. They are principally staphylococci and streptococci, but there are also large numbers of long thin bacilli whose appearances seem to indicate that they are bacilli connected with pus formation and with the development of pus pigments. There are no pus diplococci present, and so far as I can find out, no tubercle bacilli."

Remarks.—I do not think the above case can be an anomalous case of mumps. Though the salivary glands, or some of them, were included in the affected area, and I believe swollen along with the other structures, their contour could not be made out, and there seemed no sign of pain on salivation; nor were there other cases in the neighbourhood.

Assuming this disease to be a specific infection, it is remarkable that it should thus appear sporadically. Perhaps in this case the exposure or fatigue and the concourse of people, etc., may have laid the system open to the attack. It is curious I have not unfrequently noted acute illness such as rheumatic fever and pleurisy in young people begin immediately after such gatherings. At the farm where this was held a cow had recently had an inflamed tongue with a swelling below the jaw; could germs having the power to set up basi-glossitis in susceptible individuals have been in the field where the hockey, etc., was played? If so, did they work their way in from the surface of the tongue.

DIFFICULTIES IN LABOUR DUE TO THE SHOULDERS[1]

By R. G. M'KERRON, M.A., M.D.,
Obstetric Physician, General Dispensary; Assistant to the Professor of Midwifery in the University, Aberdeen

DIFFICULTY in labour due solely to the size of the shoulders is so uncommon that the following cases may be of some interest.

CASE I. About 10.30 one evening I was sent for to see a woman in labour with her tenth child. Her previous confinements had been fairly normal. I found the os about one-half dilated. The membranes were unruptured, and there was a large quantity of forewaters. The presentation was high and difficult to reach, but the head could be made out above the brim. This was corroborated by abdominal examination, which, however, was difficult owing to œdematous infiltration of the abdominal wall. The abdomen was somewhat pendulous. The pains were good. She was left in charge of a student and a nurse, who ruptured the membranes about an hour and a half afterwards, when the head was at once driven down to the floor of the pelvis and began to distend the perinæum, the occiput under the arch of the pubis. It seemed as if the child would be born in a few minutes, but notwithstanding good pains the head remained in much the same position for an hour, when I was again sent for. I found the head on the floor of the pelvis, occiput under the arch. With a pain the occiput emerged, and it seemed as if the head would at once be born. It was arrested, however, just short of the subocci-pito-bregmatic diameter, receding as the uterine contraction passed off. I waited for two or three pains, but though they were strong no progress was made. I put on the forceps. Great resistance was encountered in extracting the head beyond the point to which it had previously advanced, owing partly to its size and partly to the difficulty in getting the occiput low enough to permit of rotation round the pubic arch. When the head was delivered to the nose the forceps came off, and some trouble was experienced in getting the nose and chin over the perinæum. This was effected at last by the help of a finger in

[1] Read before the Aberdeen, Banff and Kincardine Branch of the British Medical Association, May 1900.

the rectum. But delivery was not yet over: the shoulders refused to enter the brim in spite of strong pressure from above —combined after a little with traction. While the nurse and student pressed the child downwards from the abdomen I pulled on the head, but the shoulders could not be made to advance. Suspecting that the obstruction was due to the large size of the shoulders and that the anterior was projecting over the symphysis, I directed the student to continue pressure on the fundus and the nurse to press the shoulders directly backwards from the symphysis. By this means delivery was soon completed. There was severe but not alarming hæmorrhage. No chloroform was given as the patient was suffering from bronchitis. The child was still-born and weighed twelve and a half pounds.

CASE II. Mrs M., a primipara, aet. 26, expected her confinement in the beginning of July, her last menstruation ending on September 27th. Labour did not begin till the afternoon of July 23rd. There had previously been little sinking of the abdominal tumour, though some had been noted in the end of June, when the head was found well engaged in the pelvic brim. For a few days preceding labour no fœtal movements had been felt. On examining about 3 A.M. on the 24th I found the os more than half dilated, the membranes ruptured, the head in the first position and fairly low in the pelvis, thus showing an uncontracted brim. Good progress was made till the head reached the pelvic floor, where it was arrested, and at 9 A.M. the forceps were applied. With comparatively little effort the head was advanced till the anterior fontanelle reached the perinæal border, but the greatest difficulty was experienced in getting the forehead and face free. Even after they were liberated they tended to slip back, a fact which made me remark to the nurse that the shoulders would give us trouble. After delivery of the head an attempt was made to express the body in the usual way but failed. Traction on the head, and that combined with pressure on the fundus and pressure back on the anterior shoulder above the pubis, were tried for a considerable time but without success. I then sent for Professor Stephenson. Our joint efforts, however, were at first unavailing. While Dr Stephenson pulled on the neck, I assisted by

pressure on the fundus and backward on the anterior shoulder. Dr Stephenson then pushed his hand up to the brim, with a view to pull directly on the shoulder. This failing, he endeavoured to get down the arm, but this could only be effected with difficulty by the aid of the blunt hook. With one arm down we naturally imagined that our difficulties were over. Combined traction on the arm and neck with abdominal pressure still failed to get the shoulder through the brim. After several efforts, we determined to decapitate to allow of more room for manipulation. The other arm was then taken down by means of the hook. Even yet we were unable to get the body through the brim, and before this could be accomplished it was found necessary to eviscerate, first the thorax then the abdomen. The mother was naturally much exhausted by the prolonged process, but made a most satisfactory, though slow recovery, with only a slight rise of temperature for a few days.

Apart from the difficulty of extraction, this case presents one or two features which are interesting from an obstetric point of view. There can be no doubt, I think, that in this case pregnancy was abnormally prolonged. This conclusion seems justified not only by the ordinary methods of calculation. but by the large size of the child. The unusual development is not to be explained by the size of the parents, for the mother was short and slight, while the father though well built was not over average height or weight. In prolonged gestation, where the intra-uterine development is excessive, the shoulders, as pointed out by Herman,[1] are larger in comparison with the head than is normal. The extreme difficulty, however, experienced in extracting the trunk was only partly due to the large size of the child. It was caused partly by an œdematous almost indurated condition of the subcutaneous tissues, which gave the body an undue rigidity and interfered with the normal compressibility of the shoulders. The exact cause of this condition I do not know. Unfortunately it did not occur to me at the time to have the tissues microscopically examined. Throughout pregnancy the urine was free from albumin, which excludes one of the recognised causes of anasarca in the fœtus. Rigor mortis may have been a

1 "Difficult Labour," p. 103.

factor in the condition of the child's tissues, but, on the whole, the most probable explanation is that, owing to the undue prolongation of pregnancy, the thrombotic changes in the placenta which normally precede labour had advanced to an unusual degree and interfered with the fœtal circulation—at the same time producing the anasarca and causing the death of the fœtus. The child, which had been dead for some days, weighed, as nearly as could be computed, twelve pounds.

Delivery of the shoulders is, in ordinary circumstances, so easily effected, that any obstruction after the birth of the head occasions the practitioner much unexpected annoyance, in addition to exposing the child to great risk. It may be well, then, if I review shortly the conditions in which the shoulders may be arrested and the various methods of overcoming the difficulty.

Arrest of the shoulders implies a disproportion between them and the pelvic canal. This may be of two kinds, causally different, but identical from the point of view of treatment, so that we shall make no distinction between them. (1) The pelvis may be contracted and the child of average size; though it is surprising how seldom the shoulders occasion trouble even in marked narrowing. (2) The pelvis may be normal while the child is excessively developed, as in the cases I have related.

The first difficulty that is encountered, when the shoulders are relatively too large for the brim, is an interference with normal mechanism at the parturient outlet. Normally, as you are aware, the shoulders have passed the brim when the head is emerging from the vulva. When the shoulders are arrested at the brim the head is prevented from descending sufficiently, so that the exit of the head is delayed and may be difficult. Arrest, though it may take place earlier, most usually occurs when the sub-occipito-bregmatic diameter—or just short of it—has passed the vulvar opening. Even with the forceps further advance may be resisted, and this should always suggest arrest of the shoulders above the pubis. There is practically only one other condition which gives rise to the same difficulty, though in a minor degree, namely, shortness of the umbilical cord—relative or absolute. Of the latter I have seen one instance.

The treatment in this condition is to direct an assistant to press the anterior shoulder downward and backward with the two-fold view of compressing the bisacromial diameter and of bringing it, by forcing the shoulder off the pubis, into a longer diameter of the brim. This may be done during the pains and allow of spontaneous delivery, or during traction with the forceps.

In excessive development of the fœtus the difficulty in delivering the head, due to the above cause, is not so serious as that occasioned by the shoulders. It is to the obstruction we may meet with after the delivery of the head that I wish more especially to direct your attention.

Obstruction to the birth of the shoulders may take place either at the brim or in the cavity of the pelvis, and it is necessary to distinguish these as the treatment differs somewhat.

If the obstruction occurs at the brim, our aim must be to get the bis-acromial diameter into the longest diameter of the pelvic inlet, by pressing the anterior shoulder backwards from above the symphysis pubis. Combined with traction on the neck—directed well back on the perinæum—this will succeed in the easier cases. When it fails an attempt should be made to hook the index finger into the axilla, and thus to pull the shoulder through the brim. Should this prove unsuccessful, the blunt hook may be substituted for the finger. With finger or hook, traction on the neck and pressure on the fundus should always be combined. Another method of dealing with these cases is to take down one or both arms, which not only diminishes the bulk of the shoulders, but gives a better purchase. After getting down one arm greater freedom of manipulation may be obtained by decapitation, where the child is known to be dead.

Bonnaire[1] has recently suggested division of one or both clavicles in these cases. This can be easily effected with a sharp scissors, and diminishes the bis-acromial circumference, according to Bonnaire, by 9 to 10 cm., about $3\frac{1}{2}$ inches. In experimenting on a small—$5\frac{3}{4}$ lbs.—child, which had been in spirit for several months, I found that division of one clavicle gave a diminution in the shoulder circumference of $\frac{3}{4}$ inch,

[1] *Presse Méd.*, April 1900.

division of both clavicles a diminution of 1½ inches. The discrepancy as compared with Bonnaire's results may be due to the small size of the child operated on.

When the shoulders pass the brim, as, even when large, they sometimes do seemingly without difficulty, they may become impacted in the pelvis and resist all efforts to dislodge them. This is a more common form of obstruction. The various expedients I have described may be here employed; but first, if the child is living, an endeavour should be made to deliver by traction with the finger in the axilla. This must be directed well back, the object being to bring the shoulder down under the pubic arch, which at once gives more room and usually renders extraction easy. If this method fail, an opposite procedure should be tried before resorting to the hook, namely, to push up the anterior shoulder above the symphysis, then to pull down the posterior. This has been successful in some cases. Where the child is dead, one or both clavicles should be divided. This operation, termed cleidotomy, has, so far, been performed only on the dead fœtus after cephalotripsy. Bonnaire thinks, however, that it might safely be employed on the living child. In none of his experimental operations were. the subclavian vessels or muscles injured.

Seeing that the most common cause of excessive development of the fœtus is abnormal prolongation of pregnancy, the question naturally arises whether in these circumstances it is advisable to artificially bring on labour. No doubt in both our cases this would have resulted in the birth of a living child, while in the second it would have saved the mother from the injuries and risks incidental to a prolonged and difficult labour. Personally I should be disposed, in the light of the above experiences, to agree with Hirst,[1] who recommends it as a good rule of practice to allow no woman to exceed the normal duration of pregnancy by more than two weeks. "By inducing labour at that time," he concludes, "one will occasionally interfere unnecessarily, but he will often avoid complications and difficulties of the most serious nature."

Cases like those I have related are the source of so much

[1] "American Text-book of Obstetrics," Norris, p. 561.

annoyance to the practitioner that I have been led to dwell at considerable, but I hope not unnecessary, length on their causation and treatment.

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE first meeting of the session was held on Wednesday, November 7th, Mr A. G. Miller, the President, in the chair.

Dr Allan Jamieson showed (1) a woman with acne keloid of eighteen months' duration; beginning as a clump of pustules, it was now a hard firm swelling about the size of a pear; (2) a case of tylosis palmæ in a boy aged five, in whose family it had occurred for at least five generations; the condition also existed on his feet; (3) a case for diagnosis in a woman aged thirty-six who had three hard painless tumours about the size of a hazel-nut in the skin of the chest near the axillary end of the clavicle; she had noticed them first three months ago, they had not increased in size since then, and though there was no glandular involvement, they were probably epitheliomatous.

Dr G. A. Gibson showed two cases of Friedreich's ataxia in two brothers, aged twenty-six and twenty-one. In both the disease commenced with difficulty in walking, there was total absence of all sensory disturbance, there was complete loss of the cutaneous reflexes, an easily-perceived nystagmus, the characteristic changes with regard to speech and writing, there was almost no impairment of the field of vision, no abnormality in the optic discs, no Argyll-Robertson phenomena.

Dr H. E. Langwill showed a lad, aged nineteen, who suffered from regurgitation of food without obvious cause.

Dr Byrom Bramwell showed a case of pre-ataxic abes in a man aged thirty-four, in whom the knee-jerk was present, and who was subject to frequently recurring gastric crises.

Mr David Wallace showed a specimen of the middle lobe of the prostate removed by suprapubic cystotomy.

Dr Byrom Bramwell showed a tumour of the right frontal lobe from a man of twenty-three.

Professor Annandale read a paper "On the operations for congenitally misplaced and undescended testicle, with notes of two rare cases of congenital deficiency of the testicle." He advocated the early operation for misplaced testicle as giving the best chance of the organ developing properly when placed and retained in its natural situation in the scrotum. He referred to the opinions in regard to the development of testicles which

were misplaced or undescended, and also to the interesting experiments of Mr Griffiths of Cambridge in returning the testicles of dogs into the abdominal cavity. He described the operation for this deformity as performed by him in 1878 and recorded in the *British Medical Journal* for January 4, 1879, this being the first successful case of its kind as far as he knew.

The operation for undescended testicle carried out upon similar principles was then referred to and advised in early life. One additional detail in this procedure was passing one or more stitches—not only through the lower part of the testicle and scrotum, but also through the skin upon the inner side of the thigh so as to exert steady traction upon the placed testicle. In his last three cases he had carried out this detail with success.

Notes of two interesting and rare cases of congenital absence of the testicle were then given, and their dissected preparations were shown and described.

The ordinary congenital deficiencies of the testicle as so fully and ably described in Mr Jacobson's valuable work on "Diseases of the Male Organs of Generation" were enumerated, and the paper concluded by a remark or two in connection with operative interference in such conditions. The paper was discussed by Professor Chiene, Mr John Shaw M'Laren, Mr Harold Stiles, Dr Ballantyne, and Dr Theodore Shennan; and Professor Annandale replied.

Mr Cotterill and Dr D. A. Welsh read a short note on a case of multiple tumours of unusual type. The patient, a joiner, had an accident to his wrist seven years ago. Four months later there appeared on the wrist a small growth which ulcerated and spread till it had formed a large, deep, ragged ulcer, which had eaten its way almost half through the wrist, all tissues, bones, tendons and soft parts being eroded by the growth. For over a year he was under treatment in a Glasgow hospital where it was believed to be gummatous in nature, but was not improved by free anti-syphilitic medication. Some improvement followed scraping and cauterisation, but only for a time. The ulcer again enlarged and he was admitted to the Royal Infirmary of Edinburgh in May 1896, where anti-syphilitic remedies again proved useless. Secondary growths in the forearm and epitrochlear gland appeared, the hand was useless, the disease was spreading, and therefore the arm was amputated above the elbow. The wound healed well. In July 1899 the patient returned to the Royal Infirmary with a similar growth on the forehead, and another over the deltoid of the amputated arm. That on the forehead looked like a rodent ulcer, that on the deltoid affected the subcutaneous tissue, and had the naked-eye characters of a small sarcoma or recurrent fibroid. These

two growths were freely removed, and the man was well for a year. He returned in July 1900, with a recurrence on the scar of the deltoid, on the fore and little fingers of the left hand, on the great and second toes of the right foot, great toe of left foot, and with ulcers on the right foot and thigh. Those on the fingers were said to have come on after a crush, those on the great toes after ingrowing toe-nails. All these were removed. A beginning growth on the upper lip and columna of the nose was left alone. Thyroid extract did harm. Mercurial inunction combined with potassium iodide was tried, but during this new tumours appeared on the thighs. The case had been seen by many surgeons and pathologists, and various opinions had been hazarded. Among these were: (1) Tubercle; but there was no family or personal history, nor manifestation in gland, joint, skin, or internal organ, nor bacilli in the ulcers. (2) Epithelioma; against this were the age of the patient, the partial healing of the ulcers after scraping, the sites, the non-involvement of lymphatic glands (except in one instance), the soft edge of the ulcers, and the long duration of seven years. (3) Sarcoma; against this were the chronicity, the partial healing and the absence of internal spreading. (4) Rodent Ulcer; the multiplicity and position of the growths were against this. (5) Syphilis; no gummatous slough ever separated; there were no shotty glands, nor any other sign of congenital or acquired syphilis; there was the absolute therapeutic failure, new tumours appearing during treatment. (6) Farcy; but there was no acute initial attack, no suggestion of this in nose, throat or skin; inoculation of guinea-pigs gave negative results. (7) Mycosis Fungoides; there was absence of the yellow spots like pustulation, as well as the characteristic fungation. The history, too, was against this diagnosis.

Professor Annandale leant to the view that the case was one of recurrent fibroid; Mr Caird that it was an unusual form of syphilis which had not yielded to anti-specific remedies; Dr Allan Jamieson that it was a case of chronic farcy; Dr Norman Walker that it was a case of multiple rodent ulcer; while Mr Stiles said it was certainly not rodent ulcer. Mr Cotterill, in replying, said he favoured the opinion that it was syphilitic in origin.

Obstetrical Society of Edinburgh

Presidential Address

THE sixty-second session of this Society was opened on the 14th November by the President, Dr R. Milne Murray, who delivered an able and most instructive address. He gave a

rapid résumé of the development of the science of obstetrics from the time of Hippocrates to the present. The nineteenth century was remarkable for the three epoch-making contributions which had been made during its run, viz., Nægele's pamphlet on the Mechanism of Labour, published in 1818; Simpson's discovery of chloroform thirty years later; and Lister's of antiseptic surgery, twenty-three years later still.

Our responsibilities in entering the twentieth century were, however, great, and to these Dr Murray drew attention. For every strictly obstetrical complication, with the exception of eclampsia, we professed a remedy; yet each year in Great Britain 5000 women died in child-bed. He showed that the mortality from puerperal fever in England and Wales during the years 1847-50, when no antiseptics were used, and anæsthetics were seldom employed, amounted to 1·89 per 1000. In the years of early antiseptics, and when anæsthetics were generally used—1875-84—this figure had risen to 2·28, and to 2·46 between 1886-95, when both antiseptics and anæsthetics were generally used. Such figures had been frequently discussed, and it was abundantly evident that deaths from puerperal fever had been increasing during the past forty or fifty years. It had been stated that this increase was due to faulty management on the part of the midwife, but Dr Murray showed that such an explanation was untenable.

As regards obstetrics, were we then to conclude that the work of Simpson and Lister had been in vain? The author then drew attention to the lighter side of the picture as evidenced by the results obtained at the Rotunda Hospital, where in 1896-97, the mortality was only 0·13 per thousand, and 0·39 in 1897-98.

Why were the results of private practice so far behind those obtained in such hospitals. Why should this terrible mortality go on year by year increasing in spite of improvements in sanitation, increase in scientific knowledge, improvements in instruments, and greater skill in their use? Dr Milne Murray felt sure that an explanation of much of the increased maternal mortality from 1827 onwards would be found to be due, first, to the misuse of anæsthesia, and secondly, to the ridiculous parody which, in the hands of many practitioners, stood for the use of antiseptics. In short, the misuse of two of the greatest blessings had converted them into little else than curses. The moment we interfered with labour it became a complex and dangerous process, and it was simply because this was ignored that the death-rate from child-bed had increased. Until the fact was recognised and realised that the simplest obstetric operation demanded not one whit less of care as to antiseptic precautions than was required in

opening the abdomen, we should get no further forward. A bruised and lacerated maternal canal was quite as susceptible to microbic attacks as the peritoneum and probably more so. When it was realised that labour was a natural process which in the great majority of cases it was criminal to disturb, when it was realised that every interference increased the danger a hundredfold, and when conscious of this the obstetrician brought with him to the lying-in room all that was possible of these principles of antiseptic surgery which had been at the bottom of the triumphs of modern gynæcology, we should not have long to wait for the dark cloud which now hung over us to lighten.

Dr D. Berry Hart read a paper on Extroversion of the Bladder, and Dr J. W. Ballantyne one on Cleidotomy.

Office-Bearers.—The following were elected Office-Bearers for the ensuing Session:—President, Dr R. Milne Murray; Vice-Presidents, senior, Dr M'Vie (Chirnside); junior, Dr Haultain; Treasurer, Dr W. Craig; Secretaries, Dr J. Haig Ferguson, Dr W. Fordyce; Members of Council, Dr J. Halliday Croom, Professor Kynoch (Dundee), Dr James Ritchie, Dr E. Farr Armour, Professor Simpson, Dr J. W. Ballantyne, Dr Boddie, Dr Lamond Lackie; Librarian, Dr Haultain; Editor of Transactions, Dr N. T. Brewis.

Glasgow Obstetrical and Gynæcological Society

THE first meeting of the winter was held on October 24th, Dr Jardine in the presidential chair.

There was shown as fresh specimens, a fibro-cystic tumour of the uterus, a rare specimen, by Professor Murdoch Cameron; and a suppurating ovarian cyst with adhesions to the other ovary, to the sigmoid and cæcum, by Dr Kelly.

Dr Nigel Stark then opened a discussion on the *diagnosis and treatment of malignant disease of the uterus*, the outcome of a paper read by him last winter. He asked the members to limit the discussion to cancer of the cervix and body, excluding sarcoma and deciduoma malignum, and said he would like an expression of opinion on the following points chiefly, as well as others that might occur.

1. The relative frequency of cancer in those who have had lacerations of the cervix, with subsequent erosion, cystic degeneration, and formatiou of scar tissue.

2. The best methods of diagnosing the earliest stages of cancer following on those states.

3. As regards cancer of the body of the uterus, the value of the evidence obtained from portions of tissue excised, or separated from the inside of the uterus.

4. What were the speediest and surest methods of making a microscopic diagnosis, what were the fallacies?

5. As regarded treatment, it being assumed that partial operations were useless, what was the method of performing hysterectomy that was most successful—the vaginal, abdominal, or vagino-abdominal.

6. The importance of the late affection of the glands in the pelvis in cancer of the cervix or body, contrasting with cancer of the mamma and elsewhere, and rendering unnecessary the severe operations recommended by some, in which the pelvic glands were removed.

7. The value of catheterising the ureters, and thus being able to cut widely from the cervix.

8. The question of medical treatment, and the best means of alleviating inoperable cases.

Dr Stark called attention to the remarks and statistics of Dr Halliday Croom, who had concluded that, from his experience, it was better not to operate on patients who had cancer of the uterus. He thought that Dr Croom had struck a very pessimistic and hopeless note, but his statistics were indubitable so far as they went, and his conclusion had to be considered. Dr Stark referred to the likelihood of some statistics, German or otherwise, being too favourable, from confusing cancer with other diseases, such as senile catarrh of the uterus.

Professor Murdoch Cameron said that one of the difficulties in diagnosis and treatment was the very rapid progress some cases of cancer of the uterus made. With regard to statistics, he had seen cases in Germany operated on, where he could not detect cancer at all. As for partial operations, he had had experience of these, and successes. He had had patients returning three years after in good health. If there were a large area of cervix unimplicated, he did not hesitate in removing the cervix alone. There were many inoperable cases. He had found curetting, and the application of camphor and carbolic acid, and pessaries of carbolic acid and glycerine of use in these cases. Fœtor, sepsis, and suffering were diminished by these means. The curetting was specially useful in cases with a tendency to hæmorrhage. With regard to hysterectomy he preferred the vaginal method, with clamps.

Dr Kelly referred to the difficulty of diagnosis in early cases. The only way was by the microscope, after excising a portion from the suspected part. No one who had once seen cancerous tissue, and learnt to recognise it, could doubt it. The principles of treatment were simple. If it were possible to remove the whole of the diseased tissue, cancer would be cured. The difficulty was a practical one. Dr Halliday Croom's address

had surprised him greatly. In any case we must not give up making attempts to cure such cases. In many inoperable cases there was benefit to be derived from curetting. It seemed to give relief, and perhaps arrested progress for a time. He could not agree that cases of recurrence after hysterectomy were worse than if they had not been operated on at all.

Dr Parry argued that the surgeon should be his own pathologist. It was a mistake to expect any man to make a diagnosis from an isolated piece of tissue. He contrasted the early stages and symptoms of cancer of the breast and tongue with cancer of the uterus, pointing out that there was usually nothing to draw attention to the latter till there was mixed infection.

On general surgical principles there should be a very thorough operation. He preferred the combined abdomino-vaginal method. He secured bleeding points when they were seen, as in ordinary operations, and did not try to dissect out arteries before dividing them, operating to remove the disease freely. In his own cases there had been recurrence in two-thirds, and in half of them before the end of the first year.

Dr Beatson considered that the etiology was the all-important question. Knowledge of that was essential to proper treatment. He had tried removal of the ovaries in inoperable cases, but had not met with success. He thought partial operations were perfectly logical, though often disappointing from the unseen spread of cancer cells along the lymphatics. He did not see how any operation, however extensive, could get rid of all the lymphatic spaces bearing unseen cancer cells. Were the very extensive operations recently advocated right and proper? It was all that we had to offer. But was it right to hold out any hope to the patients when our knowledge was of this nature? Until we know the etiology we must work on our present lines, but he thought it most unsatisfactory. He thought that the cancer cells lived in the surrounding tissues. We should endeavour to strengthen the tissues against them. He had seen some improvement under varied doses of thyroid gland. He had given as much as 250 grains daily without any bad symptoms, but had found that smaller doses did as well. At the Cancer Hospital morphia was seldom given. Phenacetin did all that was required, and there was no loss of self-control. In answer to Dr Parry, Dr Beatson said that the most distressing symptoms in those who came to the Cancer Hospital in a hopeless state, after being operated on elsewhere, were caused, not by discharge and fœtor, which could be alleviated, but by involvement of the bladder, ureters and rectum. Many such cases died from septic affections of the kidney.

Dr Newman said that in many situations a new growth

caused very early symptoms, *e.g.* the vocal cords. The diagnosis was then made at a very early stage, and operation completely cured the patient. So also with some cases of the tongue and lip. In such cases the patient got a fair chance. In the uterus, however, the disease was often advanced before symptoms arose. Many patients did not want to know their state, and shirked consulting a doctor. All surgeons should be pathologists. The cases that were clinically difficult were microscopically difficult. In his opinion there was no such thing as a "cancer cell." It was the relation of the cells to the tissues that constituted cancer.

This discussion was continued on November 7th, and Dr Edgar referred to his experiences. He had only seen two or three cases in the very early stages. He referred to the age limitations, and to the general symptoms. The only early symptom was hæmorrhage. In the earliest stage there was found a nodular glazed appearance, with ready bleeding on touching. It was in this condition that the microscope most aided diagnosis. For purposes of microscopical examination it was not enough merely to scrape the suspected part. A wedge of it must be removed from the cervix. In cancer of the body of the uterus curetting usually removed a good deal of friable material, and this should be examined. In cases of polypus of the uterus and senile endometritis, mistakes in diagnosis were apt to occur.

As to the question of radical treatment, if the parametrium were involved, it was usually best not to operate. To determine this a recto-abdominal examination was of great service, under chloroform. Neither mobility nor immobility of the uterus could alone decide the question whether the parametrium was involved or not. If the parametrium was yielding, and not infiltrated with nodules, it was well to give the patient the chance of operation. It was to be remembered that involvement of the bladder did not necessarily interfere with mobility. The operation was hysterectomy. Dr Edgar usually chose the vaginal method in disease of the cervix, and the abdominal in disease of the body. He had no faith in oophorectomy in cancer of the uterus.

In inoperable cases, curettage usually produced a certain amount of improvement.

During the last four and a half years he had removed the uterus seven times. In five cases the disease was in the body, and two patients died in a few days, and three were still living. In the other two cases the disease was in the cervix, and one of these patients died eight months after, but in no way was her condition worse than it would have been without operation.

The other case lived twenty-eight months, and was distinctly better for a considerable time.

Dr Reid said that in the very earliest stages the diagnosis was so extremely difficult as not to be possible. Whenever possible a pathologist should be consulted; but if it were a question between the clinical and pathological evidence, he would prefer to trust to the former. If any cervical "erosion" or such lesion did not soon improve under curettage and the application of carbolic acid, then a suspicion of malignant disease must be entertained. Such disease was often closely simulated by senile endometritis. Difficulty had arisen also, though it should not, from the presence of small breaking-down fibroids, and the retention of the products of conception. Only once in his experience had he known difficulty in diagnosis to arise from the presence of a syphilitic ulcer of the cervix. As to treatment, hysterectomy was the best form in suitable cases. He condemned the use of clamps in such operations and any attempt at speedy operation. Personally he much preferred the vaginal method.

When the parametrium was involved he had had great benefit from the use of dry tampons, previously soaked in chloride of zinc solution, for four to six hours, after thorough curetting—with the usual precautions to protect other parts. This could be repeated with excellent results.

Dr Sloan said his experience was favourable to the pathologist, but he must be given pieces of tissue, not mere scrapings. In quite early cervical disease he was in favour of supra-vaginal amputation of the cervix. If the uterus was removed, the annexa should be taken away also. In palliative operations Paquelin's cautery was of service.

Dr M'Bride referred to the youth of some patients with cancer of the uterus. He had seen it in patients between twenty and thirty years of age. He thought this fact was insufficiently recognised by general practitioners.

Dr MacLennan asked if any one had had experience of treatment of inoperable cases by formalin, and

Dr Stark said he had found it very useful. It was somewhat painful. It caused a dry slough, and the patients were usually relieved temporarily.

Dr Donald, of Paisley, referred to a case he had seen in 1888, in which there was a large cauliflower excrescence. Cancer was diagnosed by the late Dr Turner and himself. The mass was removed, and pure nitric acid used to the raw surface, and re-applied. In 1893 she gave birth to a living child. In 1896 she was admitted to the Paisley Infirmary, with a multilocular cyst of the ovary, in which cancerous tissue was found. She

died in 1897 with secondary cancer under the clavicle and elsewhere.

Dr Jardine referred to the occurrence of cancer in obstetrics. In the records of the Maternity Hospital there was only one case in the last fifty thousand. What was the treatment in such cases? Up to the fourth month extirpation of the uterus should be practised. After that period the case should be allowed to go on to full time, and then be delivered by Cæsarean section, preferably to craniotomy or any similar operation.

Dr Reid said he had come across about half a dozen such cases during his practice; and Dr Sloan observed that in these cases dilatation was usually easier than might be expected.

Dr Stark concluded the discussion, and considered that it had been interesting and instructive. He referred specially to preventative treatment, and urged the necessity of avoiding injuries to the cervix in labour, and of repairing them, and treating them and their consequences, when found.

Cancer was the proliferation inwards of the epithelium from long continued irritation, and this was the clue to preventive treatment. The most favourable operative statistics were German and American, and surely cancer must be different in type in these countries. All the same he did not at all hold with Dr Halliday Croom's pessimistic statements.

The principle of treatment was in his opinion to get cases early and to operate early. In operating speed was of no use, and might introduce harm. He agreed with Dr Reid's condemnation of clamps. To remove a small uterus per vaginam with clamps was very easy, but it was not always the best treatment for the patient.

Glasgow Medico-Chirurgical Society

MEETING on October 19th.

Dr Rutherford showed (*a*) a patient operated on six months ago for abscess of the temporo-sphenoidal lobe. This was associated with old-standing discharge from the left ear. There was some facial paralysis, mostly at lower part, on the right side, and paresis of the right hand, pain in left side of head, pulse under 60 per minute, respiration 16, temperature ranging from 100 to 97·2° Later the left pupil became dilated, with ptosis of left upper eyelid, and there was double optic neuritis. It was decided to explore the left temporo-sphenoidal lobe for pus, and about an ounce of foul purulent fluid was found and evacuated.

During convalescence the pulse and temperature continued at normal. At a second operation the cavity of the middle ear

was cleaned out and made to communicate with the cavity of the abscess. The patient when shown to the Society seemed to have made a perfect recovery in all respects.

Dr Clark, who occupied the chair for the first time since his return from South Africa, congratulated Dr Rutherford on the result in this case, and mentioned some of the details of one of his patients in Africa who, after having complete paralysis of the right arm, the result of a very septic cavity in the left hemisphere, made ultimately a perfect recovery.

(*b*) A patient who was the subject of sub-astragaloid internal dislocation of the foot treated by open operation. This had been caused by direct violence. There was a well-marked prominence on the outside of the foot below and in front of the external malleolus; also still more marked prominence on the inside of the foot, which was found at the operation to be due to the scaphoid bone, the outer prominence being the astragalus. From the incision made on the outside the astragalus was, with some difficulty, restored to its normal relation with the scaphoid. The ultimate result was gratifying. The old records of such cases were very dismal indeed, including sloughing, failure to reduce the deformity, and amputation.

A skiagraph had been taken of the foot, which, however, had not rendered the assistance in diagnosis expected of it.

Dr Kennedy had done an immediate open operation on a case, and found the astragalus almost completely rotated round its transverse plane, the head of it looking more backwards than forwards. A few weeks ago he saw a case some time after the accident. The patient was walking on the outside of the foot, and the astragalus presented on the outer side below the external malleolus. He cut a wedge out of the astragalus and was able to restore the foot to a proper position.

Dr Clark considered that such cases as had been described were best treated by open operation.

(*c*) A kidney successfully removed for complete transverse rupture. He had watched the case for a week before operating, and had not been quite prepared to find so severe an injury to the organ. There was practically no bleeding from the kidney at the operation, the vessels being thrombosed.

Dr Newman considered that the organ, from the appearance presented, would soon have become quite effete. He thought it the best course of treatment to expose a seriously injured kidney, as such were liable to become septic from colon bacillus, or possibly tubercular.

Dr Barclay Ness showed a case of anæmia, associated with enlargement of the spleen, in a young girl, and specimens illustrating the blood condition. She was fifteen years old.

There was a yellowish tinge on the cheeks without any jaundice whatever, and the usual symptoms of marked anæmia. The spleen extended to the umbilicus. There was no enlargement of the liver, nor of the lymphatic glands. When admitted to the Western Infirmary the hæmoglobin was 40 per cent., and the red cells 46 per cent. Professor Muir had detected variation in the size and shape of the cells, and some nucleated red cells. There was slight leucocytosis, but the percentage of the various white cells was not abnormal—but some myelocytes were seen. At a later date the hæmoglobin was 55 per cent. and the red cells 68 per cent., with a slightly greater leucocytosis, and red nucleated cells and myelocytes were found with great difficulty.

There had been no hæmorrhages, either retinal or gastro-intestinal. The urine had usually been normal, though latterly a slight albuminuria was present without tube casts. The temperature at first was slightly elevated, but was afterwards normal.

The girl had been bloodless since the age of eight years. There was no evidence of congenital syphilis, although her mother had had miscarriages. Dr Ritchie of Pollokshields had attended her six years ago, and found her suffering from an enlarged and tender spleen. Dr Ness said that the possible diagnoses, apart from any question of syphilis, were :—

1. Leukæmia, but that both the lymphatic and splenic varieties were excluded by the examination of the blood.

2. Hodgkin's disease, excluded, as the glands were not enlarged.

3. Pernicious anæmia, which was readily excluded from the condition of the blood.

4. Splenic anæmia. With regard to this it was more difficult to decide. It was a disease that usually occurred in adults, and was accompanied by hæmorrhages, and was of from six months' to two years' duration. The case under discussion did not tally with all the symptoms but the examination of the blood coincided, with the exception of the red nucleated cells and the myelocytes. In the *British Medical Journal* of September 1st Dr West had described a splenic anæmia found in infants, which tallied in almost every point with the case shown, though there was the discrepancy in age, and the absence of retinal hæmorrhages or gastro-intestinal disturbances. But even with these differences Dr Ness thought the case must be called one of splenic anæmia. The treatment had been by iron and arsenic.

Professor Stockman thought it was certainly a case of splenic anæmia, and had seen a very similar case which had lasted for many years, the patient being now nineteen years old, and in fair health, except for attacks of pain in or about the spleen, and

hæmorrhages from the nose. He had seen acute cases of the kind which had rapidly progressed to a fatal issue. He considered it probable that in these cases the anæmia was due to internal hæmorrhages, and this also accounted for the yellow colour. He was not aware that iron and arsenic had any permanent effect in curing the condition.

Dr Carstairs Douglas, Dr Hunter, and Professor M'Call Anderson also remarked on the case.

MEETING on November 16th.

Dr Lindsay Steven showed specimens from a case of Addison's disease. He had made these *post-mortem* examinations on cases diagnosed as this disease since 1896, and he referred to the signs and symptoms and chief features of the first two previously related, and showed the parts from the third case. The kidneys and capsules, aorta and nerve plexus, were all shown in a dissection made by Dr Hugh Maclaren. The capsules were seen to be entirely caseous. Clinically the patient had been as dark as a Lascar. He had had ill-health for eighteen months, but his prominent symptoms only for three. He complained chiefly of progressive loss of strength. He had also pain in the left mammary region; also vomiting and headache, and slight albuminuria. There was no alteration in the red cells and no leucocytosis. In his youth (he was thirty-five years of age at the time of his last illness) he had had tubercular adenitis in the neck. At the *post-mortem* a cretaceous nodule was found at the apex of the left lung. Supra-renal gland had been administered to this patient, without benefit, and had to be stopped owing to sickness. In the other two cases referred to there had also been violent sickness following the administration of the gland.

In none of the three cases had there been the least evidence of leucoderma.

(2) Dr Munro gave an account of a fatal case of anæmia following uterine hæmorrhage. The patient was forty-two years old, and six weeks before admission there had been a severe flooding; the menstruation had previously been regular. The red cells were found to be reduced to 1,600,000, the hæmoglobin to 20 per cent.; the white cells numbered 9000. Formation of rouleaux did not occur. After a week or two there was another severe hæmorrhage and she was transferred to Dr Kelly's ward, and he removed a small sloughing myoma. She improved for a time, but later on the hæmoglobin fell to 10 per cent., the red cells to 2,000,000, and there were elevation of temperature and incontrollable diarrhœa, and soon after a rigor, death occurred.

At the *post-mortem* the appearance of the organs were those

of a case of pernicious anæmia, but no hæmosiderin was found in the liver.

Drs Barclay Ness and Hunter referred to cases somewhat of the same kind, and to their close resemblance to pernicious anæmia.

Dr Ferguson considered that hæmosiderin was generally to be found in these cases, and asked if Dr Munro could explain its absence. He recalled two cases, fatal cases, in which there had been found hæmosiderin in considerable amount.

Dr Adamson asked if Dr Munro could exclude sepsis as a cause of the fatality. The history of the sloughing myoma and the appearance of the temperature chart suggested this as a possible factor in producing the anæmia.

Dr Mackenzie Anderson wished to know if Dr Kelly had considered the uterine condition sufficient to account for the primary hæmorrhage.

Dr Lindsay Steven was much interested in the case. The actual diagnosis of pernicious anæmia was not so easy as it was thought to be. In this case severe hæmorrhage had produced a condition clinically resembling pernicious anæmia, and great care had to be taken to exclude such cases when diagnosing the latter disease. He was surprised that in this case there had been no retinal hæmorrhages, and that no hæmosiderin had been found in the liver.

Dr Munro in reply, said that at the site of the myoma there had been appearances suggesting, but not more, a suspicion of cancer. He did not think that sepsis had anything to do with the condition.

(3) Dr Munro showed sections prepared by Dr Hugh MacLaren from a case of cancer of the pylorus, in which a myoma of the stomach was so situated as to resemble a ball-valve at the pyloric orifice.

Dr Steven thought the association of the two kinds of tumours interesting. The alimentary canal was a common site for the presence of myoma. He recalled a case of pedunculated tumour (probably myoma) in the gullet which had acted as a valve, and finally caused complete obstruction and death.

(4) Dr Munro and Dr MacLaren showed sections of lung from a case of pneumonia with unusual features. The patient was aged twenty, and presented the usual signs of pneumonia over the whole right back. By the sixth day the signs had extended round to the front, with hyperdicrotic pulse, diarrhœa and delirium. No crisis occurred, and he died on the fourteenth day. At the *post-mortem*, pneumonia in all its stages was found, fibrin deposit, resolution, and in parts commencing abscess formation.

In the pleura in front a small abscess was found containing pneumococci, and the same organism was found in the enlarged spleen, but none at all in the lung. In reply to Dr Ness he said there were no other organisms present that he was aware of.

Dr Steven was not prepared to say that the case was so unusual as the title in the billet made out. He had notes of 120 cases of *post-mortem* in pneumonia, and it had been common to find all stages of pneumonia present at the seventh, eighth, ninth, and even the twelfth day of the disease. He noticed in this case that the respirations from the first were very frequent (from the chart shown) and had so continued day after day. This was always an important feature in forming a prognosis, and great rapidity was of bad omen. He would much prefer a case to have delirium than very rapid respiration.

(5) Dr Hugh MacLaren showed sections of large intestine from a case of chronic interstitial nephritis where the naked eye appearances resembled those met with in dysentery.

(6) Dr Edington showed as a fresh specimen a salivary calculus removed from Wharton's duct. There had been no swelling in the submaxillary gland.

Forfarshire Medical Association

THE above Society met in the University College, Dundee, on Thursday, November 1st, at 8.30 P.M. Dr C. S. Young, Vice-President, in the chair.

Professor Kynoch showed a specimen of ovarian tumour removed by operation per vaginam on a patient from whom he had removed a similar but larger tumour by the abdominal route. He gave the reasons for his change in operation, and discussed the relative merits of the two operations, preferring the latter if it be at all possible.

A number of pathological specimens were sent to the meeting by Professor Sutherland from the Pathological Museum, some of which had been presented by Sir William Gairdner.

Amongst them were specimens of congenital malformation of pulmonary valve, stenosis of pulmonary valve, stenosis of pulmonary artery, acute endocarditis of aortic valve with rupture of valvular aneurism, etc.; eight specimens illustrating stages of phthisis pulmonalis, a Sheffield needle grinder's lung, etc.

Dr A. M'Gillivray read a paper on advancement *versus* tenotomy in the surgical treatment of concomitant strabismus and its treatment by optic and orthoptic means; the merits of the two methods of surgical interference were discussed, convergent strabismus being taken as an example. Advancement was shown to be more rational, being based on etiology, and

having for its object the strengthening of the disused and therefore weakened external recti, instead of the weakening of the unimpaired internal recti by tenotomy. For example, tenotomy of the internal recti impairs their influence on the rotation of the eyeballs, whose lateral movements are then controlled by four weakened muscles, whereas advancement of the external recti strengthens their action, and the lateral movements are then controlled by four strong muscles, as the internal recti are left unimpaired.

Both external recti should be advanced at the same time, as the condition was a bilateral one. Over correction was never seen after double advancement, even when, in severe cases, it was associated with exsection of a portion of the tendon of the muscles. This could not be said of tenotomy.

Cases were shown to demonstrate the above points.

Professor A. M. Stalker gave an account of a case of visceral syphilis. The patient, a man aged 47, was admitted into hospital suffering from steady emaciation with a history of hæmatemesis four months previously, but without the symptoms or physical signs of gastric disease. There was no indication of syphilis. He died, and at the *post-mortem* examination the fatal lesion was found to be a stricture of the jejunum four feet from the pylorus due to a cicatrised ulcer. In addition there was a healed ulcer of the stomach and extensive fibrosis of the heart, associated with arterio-sclerosis and blockage of the coronary arteries.

Dr C. Kerr confirmed the diagnosis from his attendance and treatment of the members of the same household.

Dr W. E. Foggie described the nervous sequelæ found in a man five months after he had been injured by a fall of 40 feet, which had apparently resulted in unconsciousness, retention of urine and severe bruising, but no evident fracture. His present condition showed partial rectal and genital paralyses; symmetrical areas of thermo-anæsthesia and analgesia over both heels enclosing much smaller areas of tactile anæsthesia, numbness and impaired sensation around the anus; increased knee jerks; pains in the bladder and urethra, as well as pain over each side of the small of the back. These phenomena pointed to a hæmorrhage into the cord, involving to some extent the sacral segments from the second to the fifth and probably also their roots, unless the irritative phenomena above mentioned were secondary to the cystitis still present.

Dr Mackie Whyte asked if there were any relation between the sensory supply of the anus and that of the heels that would explain the above case, which did not seem in harmony with Head's diagrams.

Dr Foggie, in reply, acknowledged the difficulty, and could only suggest that the cord had been injured in more than one place and at different levels.

Dr J. Mackie Whyte gave an account of a case of a quarry-man, who had during the last year and a half frequent attacks of dyspnœa with some cough and slight expectoration. The physical signs were those of chronic pneumonia. He died during an attack of dyspnœa. These frequent attacks were characterised by their sudden cessation.

The *post-mortem* showed the lungs to be those of a case of pneumokoniosis. These were shown to the meeting.

Aberdeen Medico-Chirurgical Society

THE first meeting of the Session 1900-1901 was held on November 1st, Dr W. H. Williamson, President, in the chair.

After paying a warm tribute to the late Dr James Rodger, who had rendered invaluable service to the Society, the President delivered an interesting and instructive address on "The relationship of Dentistry to Medical Education and to the practitioner of Medicine." The address will appear in extenso in a later number of the Journal.

A meeting of the Society was held on November 15th, Dr W. H. Williamson, the retiring President, in the chair.

The annual report of the Council was submitted and adopted, and the following office-bearers were elected for Session 1900-1901 :—President, Dr George Watt; Vice-President, Professor Finlay; Secretary, Dr John Marnoch; Recording Secretary, Dr A. W. Mackintosh; Treasurer, Dr John Gordon; Librarian, Dr Wm. Findlay; Council, Dr Edmond, Dr Fraser, Dr Garden, Dr T. Milne, Professor Stephenson, Dr W. H. Williamson.

New Books and New Editions

A Text-Book of Medical Treatment, Diseases and Symptoms. By Professor NESTOR TIRARD, M.D., F.R.C.P. Pp. 692. London: J. & A. Churchill. 1900. Price 15s.

THE author states that he has written this work in order to help the student who may know many diseases and symptoms for which any particular drug may be employed, and yet at the same time may be unprepared with the various drugs serviceable in the course of the treatment of any individual disease or symptom. Professor Tirard wisely remarks that in most of the standard text-books on Medicine the subject of treatment

is dealt with not only briefly, but in general terms, so affording little help in practical work.

A perusal of the volume shows how impossible it is to describe the proper treatment of a disease without at the same time giving a résumé of the symptoms and pathological conditions present. The work, however, gains in interest and value, just because it is not a dry recapitulation of the drugs which may be used in each affection. It is an eminently practical treatise, and the teaching is perfectly orthodox, only the ordinary recognised methods of treatment being described.

As showing the relative importance of treatment, we find that the author devotes two chapters to Diseases of the Circulation; three chapters to Respiratory Diseases; Digestive Troubles require six chapters; while Diseases of the Liver, Kidneys and Nervous System are amply treated of in two chapters for each. The Specific Infectious Diseases are treated of in three chapters, as are also Constitutional Diseases, and in the Treatment of Tuberculosis two chapters are occupied.

It is impossible to give an idea of such a work by examples, but we may cite one or two of the author's ideas. Speaking of Aortic Heart Disease when the hypertrophied left ventricle is beginning to degenerate, Professor Tirard says that in a large proportion of such cases benefit results from the use of digitalis, and speaking generally the degree of benefit likely to result from the use of this drug is to be measured by the extent of failure of compensation; in other words, there is but little scope for the use of digitalis in the earlier stages of aortic disease, while it is of extreme service in the later stages. It is a pity that the author does not give us his own views regarding the efficacy of the Schott method of treatment, or of the Nauheim system. Professor Tirard confirms what most of us have already observed, namely, that cardiac hypertrophy has become more frequent of late owing to the amount of strain due to injudicious exertion in bicycling uphill or in the face of a strong wind.

The chapters on the Treatment of Tuberculous Diseases of the Liver and Intestinal Parasites are particularly full and reliable, and though we note that some of our favourite remedies may be omitted, yet the work is one which will prove eminently useful both to the student and practitioner.

Transactions of the Royal Academy of Medicine in Ireland. Vol. XVII. Edited by JOHN B. STORY, M.B., F.R.C.S. Pp. 683. Dublin: Fannin & Co., Ltd. 1899.

THESE transactions afford abundant evidence of excellent work done. The various sections—Medicine, Surgery, Obstetrics,

Pathology, Anatomy and Physiology, and State Medicine—are represented by a series of most interesting and able papers, which, taken collectively, cover an enormous field. A special feature of the volume is the wealth and excellence of the illustrations, *e.g.* in papers on "The Clinical Features of Beri-beri," by Conolly Norman (pp. 145-179); "The Operative Treatment of Hernia," by J. S. M'Ardle (pp. 210-231); "Dislocations and Fractures of the Astragalus," by H. G. Croly (pp. 232-250), etc. In the Obstetrical section, there are records of "One Hundred Cases of Abdominal Section," by Alfred J. Smith, also full clinical reports of the Rotunda Hospitals and of the Samaritan Hospital at Belfast. In the section of State Medicine, there are papers on the prevalence and distribution of tuberculosis in Ireland and on the use of formalin vapour as a room disinfectant. In the section of Anatomy and Physiology, Dr A. F. Dixon has a specially interesting paper on "The Sensory Distribution of the Facial Nerve in Man," with full references. There are many valuable contributions to the sections of Medicine, Surgery and Pathology, which we have not space to name. We heartily commend these transactions to our readers, and congratulate both editor and publishers on this, the latest volume.

Glasgow Hospital Reports. Vol. II. Edited by GEORGE S. MIDDLETON, M.A., M.D.; HENRY RUTHERFORD, M.A., M.B., C.M.; and WALTER K. HUNTER, M.D. Pp. 402, with 55 illustrations. Glasgow: James Maclehose & Sons. 1900.

THIS is an excellent volume, and does credit alike to contributors and editors. The articles are well selected, and each is well worthy of careful perusal; the illustrations are numerous and good.

The volume opens with peculiarly suggestive remarks by Sir Wm. T. Gairdner on a "Case of a small aneurism of the first part of the arch of the aorta, opening into the pulmonary artery and conus arteriosus of the right ventricle." There are many other interesting papers in general medicine, *e.g.* cases illustrative of difficulties in the diagnosis of aneurism of the aorta, family tendency to hypertrophic cirrhosis of the liver, pertussal glycosuria, etc.; in neurology, there are articles on chorea, epileptic speech, gastric tetany, etc.; and one of special interest "On the clinical significance of double optic neuritis in children and young adults, and on the capacity for recovery from symptoms of tumour of the brain"; in general surgery, there are valuable papers on the operative treatment of umbilical hernia, of cicatricial contraction of the fingers, of spina bifida and

hydrocephalus, etc.; in gynecology, there are notes of a series of cases; in therapeutics, there is a paper on the use of anti-streptococcus serum in scarlatina anginosa, also observations regarding the therapeutical action of iodine and iodides; in pathology, there is a lucid account of the recent views of the nature of Immunity.

The whole volume is thoroughly practical, and may be confidently commended to our readers.

Edinburgh Hospital Reports. Vol. VI. Edited by G. LOVELL GULLAND, M.D., F.R.C.P.Ed., and JAMES HODSDON, M.D., F.R.C.S.Ed. Pp. 397. Edinburgh: Oliver & Boyd. 1900. Price 12s. 6d.

WE heartily congratulate the editors on the issue of this, the sixth volume of the Edinburgh Hospital Reports. The papers contained therein, thirty-eight in number, cover a wide field in medicine and surgery, and are "almost without exception based upon cases occurring in the practice of the Hospitals of Edinburgh and Leith." They include papers on nervous diseases *e.g.* "Clinical notes on two cases of Friedreich's ataxia," "A case of Charcot's joint disease, showing bilateral dislocation of the hip-joint," "A new method of treating cases of folie circulaire," etc.; papers on diseases of the heart, *e.g.* "Nine cases of congenital heart-disease," "Acute heart-softening," etc.; notes on many interesting surgical cases—electrolysis in aneurism, the radical cure of hernia, the surgical treatment of high myopia, etc. More special papers are: "Pathology of the germinal period of ante-natal life," by Dr J. W. Ballantyne; "On rust-staining of the ocular tissues," by Mr J. V. Paterson; "Tuberculosis in Children: a statistical examination of the *post-mortem* records in the Royal Hospital for Sick Children, Edinburgh," by Dr T. Shennan. The statistics of the Edinburgh and Leith Hospitals are appended.

The whole volume is eminently a readable one and contains the results of much valuable work, the illustrations are excellent, and the letterpress leaves nothing to be desired.

The Pocket Formulary for the Treatment of Disease in Children. By LUDWIG FREYBERGER, M.D., Vienna, M.R.C.P. Lond., etc. Second Edition. Foolscap 8vo, pp. 240. London: Rebman. 1900. Price 7s. 6d. net.

IN preparing this second edition, Dr Freyberger has largely rewritten his useful little book. While the general plan of the work remains the same, various changes have been made in the

text and thirty-two pages of new matter have been added in order to adapt it to the requirements of the new Pharmacopœia.

The greater part of the volume consists in a systematic description of the various drugs which may be used in treating children. Their properties, uses, therapeutic indications and doses are detailed, and in many cases the substances which are incompatible with them are given, and their antidotes in the case of poisons. Useful suggestions follow as to the best way of disguising the taste of the medicine, and often one or two formulæ are added. There is an Appendix dealing with the composition of baths, gargles, sprays, enemata, etc., and a long Therapeutic Index.

The book can scarcely fail to be of great service to any practitioner who has much to do with children and who wishes further knowledge about the drugs he uses. It contains much practical information in short space and well arranged. The dosage is treated of elaborately—almost too much so. Who, for example, would ever wish to administer $\frac{1}{2400}$ gr. of atropin hypodermically to a newly-born child? We are surprised that Dr Freyberger has made no alteration in the doses of the tinctures of belladonna, digitalis and nux vomica in this edition, although the strength of these preparations is so greatly changed in the new Pharmacopœia.

For the long list of drugs headed by the names of diseases which is contained in the Therapeutic Index we can see little use. What good purpose can it serve to enumerate twenty-five *drugs* for the treatment of Asiatic cholera, sixteen for typhus, and thirty-seven for scarlet fever? We shall warmly welcome future editions of the Formulary, but we hope that in their preparation the author will treat some of its exuberances unsparingly, and in the light of practical common sense.

The Medical Diseases of Children. By NATHAN OPPENHEIM, A.B. (Harv.), M.D. (Coll. P. & S., N.Y.). Pp. 654, illustrated. New York: The Macmillan Company. 1900. Price 21s. net.

AS we gather from his preface, the author's aim in writing this book has been to produce "a work on the diseases of children, which will tend to promote a greater use of logic and a lessened reliance upon empirical methods than have formerly been common." With this excellent end in view he has written a stately volume which reflects in places some of the best work of recent years on the subject of children's diseases. The author's laudable endeavour to adhere to the true methods of science is apparent throughout his book and gives to it a higher character than can perhaps be claimed for some recent medical

works. We doubt very much, however, whether he excels in this, or indeed in any other respect, many previous writers of text-books on his own subject.

Dr Oppenheim has illustrated his book by means of about a hundred representations of the ordinary microscopical appearances of various normal and abnormal tissues. To these we can find no reference in the text, and we might have suspected their insertion to have been an after-thought on the part of the publisher, had the author not explained their use in the following rather extraordinary way. He says, "the greatest stress in modern medicine has been laid upon the necessity of depicting lesions in the most graphic manner possible. Following out this idea, the whole available space for illustrations in this book has been given up to photomicrographs of pathological sections, which have been thought to have a keener and greater didactic value than pictures of instruments, photographs of patients, and representations of surface changes, all of which must, on account of the limitations of fidelity in reproduction, convey either a trivial or one-sided impression." Will any of his readers endorse this view?

Another peculiarity which the author seeks to justify in his preface is the omission of references to the work of others. This may render the text more readable, but it seems to us a pity in so large a work.

Dr Oppenheim's book may be recommended as presenting a large amount of trustworthy information about the commoner diseases of childhood. He would, we think, have made it more interesting had he allowed the clinical experience he has himself had to appear more prominently, and thus left on his chapters a more decided impress of his own personality.

Practical Nursing. By ISLA STEWART, Matron of St Bartholomew's Hospital, London, and HERBERT E. CUFF, M.D, F.R.C.S. Vol. I. Crown 8vo, pp. 250. Edinburgh and London: Wm. Blackwood & Sons. 1899. Price 3s. 6d.

THIS little work strikes us as admirably suited for its purpose. It is written in a clear and interesting style, and gives reliable information of a most practical kind on a large number of subjects of the greatest importance to nurses. The details of the nursing of various medical and surgical ailments and of special branches of medicine are to be dealt with in the second volume. In this, the nurse's work is treated from a general point of view, and such subjects as Hygiene, Diet, Baths and other external Applications, Administration of Medicines, Disinfection, Surgical Nursing, etc., etc., are discussed.

We have pleasure in recommending this as one of the best practical books on nursing we are acquainted with. We know none better.

The American Year-Book of Medicine and Surgery. Under the general editorial charge of GEORGE M. GOULD, M.D. Surgery. Imperial 8vo, pp. 560, with 114 illustrations. London: Rebman, Limited. 1900. Price 17s. net per volume.

THE 1900 issue of this Year-Book, which is one of the best of its kind, has been published in two volumes, "in order to make the work less tiresome to hold in reading, as well as for the convenience of specialists." The volume before us is labelled "Surgery," and contains chapters on General Surgery, Obstetrics, Gynecology, Orthopædic Surgery, Ophthalmology, Otology, Diseases of the Nose and Larynx, and on Anatomy.

Such a work does not lend itself to detailed criticism, suffice it to say that a careful survey of the sections on the subjects with which we are most conversant has not enabled us to detect the omission of any important work issued during the last year, and that we have already found it most useful for reference.

The editorial notes appended to many of the abstracts are of especial value. They indicate the careful manner in which the selection of papers is made, and furnish the general reader with an authoritative criticism of the matter in hand.

It is sufficient praise to say that the work maintains its high reputation as a record of the year's progress, and as a storehouse of information for the busy practitioner who is unable to keep abreast of the current medical literature from week to week.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

SURGERY

By JOHN SHAW M'LAREN, F.R.C.S.Ed.,

Assistant Surgeon, Royal Infirmary, Edinburgh

Buried Silver Wire Network for closing Herniæ, etc.—All that Witzel says deserves attention, and when we find a surgeon of his reputation recommending a particular course with regard to the vexed question of the radical cure of hernia

and of the treatment of ventral herniæ, his views demand really thoughtful consideration. He contributes an article to the *Centralblatt für Chirurgie* (March 10th, 1900), in which he gives his verdict in favour of Schede's buried wire sutures. He complains that Schede's work, published in 1893, did not receive the attention it deserved, and goes on to state that for some years he has followed with the best results the practice of using buried wire sutures introduced in such a way as to form a close network, both to prevent and to cure herniæ.

Though opinions vary widely with regard to the best method of suturing an abdominal wound, all are agreed on one point—that sepsis is fatal to a good result. Therefore if stitches are to remain sunk in the tissues, they ought to be of such a nature as to stand the severest sterilizing processes, and also to offer no interstices for bacteria. These conditions are fulfilled by silver wire, which in addition, according to Credé, actually exercise an antisepticising influence on the surrounding tissues. To prevent herniæ, the suture which pierces the whole thickness of the abdominal wall is to be abandoned and the parietes sewn in layers. Especial care is to be bestowed on accurately stitching the "commissure" which joins the rectus sheaths across the middle; if possible the sheath of the rectus should never be opened. In order to hit the linea alba accurately in opening the abdomen the umbilicus should be dragged upwards and forwards by a sharp hook before the incision is made.

In suturing the normal abdomen in the middle line, the deepest sutures (of wire) should pierce the peritoneum and fascia transversalis and also catch in the edge of the rectus on each side; they should be $\frac{1}{2}-\frac{3}{4}$ of a centimetre apart, be tied by twisting with the fingers, and be cut off about a centimetre long, long enough to be bent over and lie sweetly in the tissues. The edges of the fascia in the middle line are then accurately apposed by a continuous stitch of fine silver wire, which also serves the purpose of holding down the ends of the wires below. The narrow network thus produced is then buried by a fine silver wire suture which closes the skin wound.

The closure of inguinal hernial openings by a wire network was first tried in cases of recurrence following Macewen's, Kocher's and Bassini's operations. The wire sutures are inserted in such a way as to form a close network of obliquely crossing strands, stretching from the middle line across the inguinal canal and under the whole thickness of Poupart's ligament, room being left for the cord. In ventral herniæ in the middle line the peritoneum need not be opened; the edges of the aperture are drawn together only so close as is possible without any great strain, and the sutures which are used for this purpose are silver

wires passed vertically, transversely, and obliquely, so as to form a close network, which in all cases should be at least three times as large as the exposed opening. (In one case of hernia through a scar in the hypogastric region, the network was as large as the palm of the hand.) Even in cases where suppuration occurred, the result was perfect—so long, of course, as the network did not become absolutely loose.

Coming from Witzel this is very interesting. As regards the suturing of the linea alba, in a note of Richter's to Witzel's paper, it is stated that Schede for some years has modified his procedure for laparotomy suture to this extent, that he includes the whole abdominal wall except the skin in one suture (wire), and that he has never seen a hernia follow. In this country many of the ovariotomists have held stoutly to the one suture transfixing all the layers at once—peritoneum included—and assert as stoutly that herniæ are seldom met with. I confess that the closing of hernial openings by anything so "artificial" as pieces of muscle (femoral hernia), fascia, and so on, used as lids, so to speak, has always appeared to me a method doomed to failure, and the use of a permanent network of wires seems still less practical; but after Witzel's introduction of it, it will be interesting to hear further of this method.

Operative and other Treatment of Fractures.—There is without doubt a "boom" at present in the literature of fractures, due probably to a large extent to radiography. Delorme (*Gazette des Hôpitaux*, March 27, 1900) thinks that the subject of fractures might receive closer attention than it does from surgeons, who seem to forget the matter in the rush after new operations. Radiography shows the need for care. Delorme gives his verdict in favour of some mobile, immovable apparatus; he approves of a zinc apparatus provided with movable flaps. He pleads for care in accurately apposing the fragments in order to hasten union; inaccurate apposition should not be forgotten as a cause of delayed union. Massage and electricity are too often omitted, and can be applied without interfering with immobility and the retention of the fragments in correct position; this prevents stiffness of joints and atrophy of muscles.

Notwithstanding all that has lately been written about massage, there is no doubt that it is not yet sufficiently practised in the treatment of fractures. Again, there can be no question that inaccurate apposition often accounts for delay in union. But where is the cause of difficulty in reduction to be sought? An answer to this question is given by Golding-Bird in a most interesting paper in the *British Medical Journal*, April 21, 1900, and also by Arbuthnot Lane in his book recently published at the *Clinical Journal* Office, "Cleft Palate, Treatment of Simple

Fractures by Operation, &c.," and in an article in the *Lancet*, May 26, 1900. Golding-Bird's paper consists of a clinical lecture on the "Riding Fragment" in fractured leg. He refers to the well-known fact that it is much easier to reduce a fracture of the femur by extension than a fracture of the leg. He attributes this to two causes—first, the fact that in the leg, muscles such as the soleus are attached to, and in extension will drag upon, the upper fragment as well as the lower; and second, and more important, the shape of the fragments produced in the spiral fracture. For Golding-Bird believes that instead of being very rare, the spiral fracture is the commonest fracture of the tibia, occurring almost always when the fracture is due to indirect violence. It will be found that pulling on the lower fragment in such a fracture, even with the aid of anæsthesia, produces no improvement, and even rotation, though it is better, does not avail. Even after the fragments are exposed by incision and are replaced, they will have a tendency to *untwist* again round the axis of the bone. What is this due to? To the fracture of the fibula higher up. This bone is snapped, and its ends, imbedded in the muscle, will be twisted by the very rotation which the surgeon employs to replace the tibial fragments, and will untwist again and so displace the tibia, the moment they are released. Golding-Bird thinks that where the displacement is slight, say one-eighth of an inch, a displacement that can be felt by the finger, it is needless to operate; but where the projection is marked, or the axis of the lower fragment is seriously altered, an incision should be made in order to replace the fragments—over the fibula, too, if needful—and wires or nails inserted if necessary.

Arbuthnot Lane in the paper and book referred to advances his well-known views with regard to the operative treatment of simple fractures. These are still opposed and even scouted by some eminent surgeons, but it must be a source of satisfaction to him to find so many adopting them. Many think he goes too far in urging operation, but there can no longer be any doubt that the number of cases requiring it is no inconsiderable one. He agrees with Golding-Bird's view as to the frequency of the spiral fracture—in fact he led the way in this view—but his explanation of the difficulty in reduction differs somewhat. He describes the muscles as inextensile "ties," which are increased in bulk and so diminished in length by the hæmorrhage and inflammatory effusion. In many cases it is impossible to reduce the fracture without an incision, which enables the surgeon to seize the ends of the bones and force them into position; even under deep anæsthesia, when the "muscular spasm" is abolished, mere traction will not allow replacement. It must certainly be

admitted that Arbuthnot Lane plays off against each other the exponents of the "orthodox" views in an interesting and refreshing manner. Heath attributes the difficulty in reduction to muscular spasm which "passes off in the course of a few hours, and you can generally manage with care and patience to put the limb into a proper position." Marmaduke Shield also attributes this difficulty to muscular contraction, which *subsides in a week or ten days*, after which he would attempt to get the fragments into good position. Pearce Gould would "reduce the fragments at once, at the earliest possible moment, remembering that lapse of time always increases the difficulties in doing this, never lessens them, and soon makes them insuperable." "The causes of the displacement are either the fracturing force, the action of gravity, or the pull of muscles." Arbuthnot Lane very properly asks how any one of these can constitute a difficulty in reduction. The fracturing force no longer exists, the action of gravity, too, can be dismissed, and the pull of muscles is abolished by chloroform. I have frequently observed how extremely difficult it is to replace the fragments even in a compound fracture, with the fragments freely exposed by incision, and this with the patient anæsthetised; this means that reduction would have been impossible in the case of a simple fracture. I am certain that text-books give no adequate idea of the large proportion of cases of fracture of the leg in which accurate reduction is impossible, and in which the surgeon is content with "fairly good position."

Most surgeons at the present day would operate on a case of simple fracture of the leg were the displacement serious, involving, say, marked shortening. The question is, what extent of irreducible displacement is to demand operation? Golding-Bird advises it if displacement, either longitudinal, or in the bone's axis, is marked. Arbuthnot Lane holds that "the surgeon should, *failing to obtain accurate apposition as determined by the radiograph*, cut down on the seat of fracture and return the bone or bones to their original form." He would not be satisfied with what is clinically called "good position," when by operation he can obtain a perfect result, and in the case of the leg this is particularly important. He makes in this connection a most serious statement. He asserts that a large number of labourers and tradesmen are permanently disabled for their work by ordinarily well-set simple fractures of the leg. He was "amazed" (as the outcome of wide investigations he made) "at the unsatisfactory nature of the results which were obtained in our hospitals and elsewhere, and at the loss to the value of the man as a money-making machine." If such a finding represents the real state of affairs generally, then Mr

Lane's practice is right. It is to be remembered, too, that many cases of delayed union are probably due to "setting" in a "fairly good position."

Steinbach has a paper "On the use of Fixation Plates in the Treatment of Fracture of the Leg" in the *Annals of Surgery*, April 1900. His own experience in operating in fractured tibiæ was at first confined to the employment of silver wire, and he rightly says that whilst it requires considerable disturbance of the soft tissues in drilling through both fragments, the wire often becomes loose and fails to maintain the fragments in apposition. He recommends as much more successful the application of a silver plate in the form of a "cleat" to the flat subcutaneous surface of the tibia secured by small galvanized steel screws. The plate is made of silver one-sixteenth of an inch in thickness, three and a half inches in length, and three-fourths of an inch wide, with perforations for the screws one-half inch apart. A suitable incision is made over the fracture, and the skin is loosened laterally without disturbing the periosteum. After the removal of blood-clots, interposed soft tissues, etc., the fragments are adjusted and held in place while the bone is drilled through into the medullary cavity with a drill slightly smaller than the diameter of the screws to be employed. The plate is then fixed, two screws being usually employed at each end, and the skin is sewn over it with interrupted sutures. The plate can be used even in cases already septic with proper precautions for drainage. It is removed under local anæsthesia after union has taken place. Four illustrative cases are given.

The tendency of wire to loosen is well known, and many cases occur in which a plate would certainly be very useful. If advisable, it might be left buried in the tissues. A useful description of instruments is found in Arbuthnot Lane's book referred to.

GYNECOLOGY AND OBSTETRICS

ON THE INFLUENCES REGULATING THE CONSTITUTION OF MILK AND THE POSSIBILITIES OF MODIFYING IT

(*Continued from page* 456)

By R. C. BUIST, M.D., M.R.C.P.Ed.,
Gynecologist to the Royal Infirmary, Dundee

THE administration of Food in varying quantity and of varied character seems to promise a means of deliberately influencing the composition of milk, but this expectation is very much cur-

tailed by the few careful investigations that have been made. From these it seems that change of diet may temporarily increase the amount of fat, but that the increase soon subsides, and that rich diet produces this effect only when the previous feeding has been insufficient; whereas if the previous diet has been full, no amount of overfeeding materially affects its composition. The variations are all within the normal limits, and the whole result of the investigations is to show that the aspirations after a "nursing diet" are futile, and that the nutrition of the child is not to be bettered in the way of overfeeding the nurse. The evidence for the favourable influence of somatose is of the same unscientific character as that advanced for most of the popular opinions relating to lactation, and Thiemich expects that in course of time it will reach the same category as most other galactagogs now rest in.

Thiemich communicates several interesting experiments of his own as to the possibility of the direct passage of food stuffs into the milk. Using the iodine addition method of v. Hübl, he administered successively goosefat, linseed oil and palmin (a cocoanut butter), and found that the iodine co-efficient of the milkfat rose slightly with the goosefat, markedly with the linseed oil, and fell with the palmin, following the iodine co-efficients of the administered fats. On the other hand, the search after alcohol in the milk, after its voluntary or experimental absorption, has been in vain, and likewise not proven in the effect of nervous disturbances in the nurse. In choosing a wet nurse, we need merely ascertain that she is healthy and has an abundant yield of milk; the composition of the milk may be allowed to look after itself.

With regard to the statement that the limits of variation in the composition of milk on which the nursling thrives are more important than its average composition, which Thiemich has used all through as a criterion, there is this to add, that none of the investigations so far show whether a high average composition with variations inside the physiological limits is or is not favourable to the growth of the child.

The last division of the subject is the very important question as to whether drugs administered to the nurse affect the child, or are excreted through the breast at all. The evidence is again very unsatisfactory and contradictory, especially so far as it is based on merely clinical observation as to disturbances in the child after, whether post or propter, the administration. Fehling and Pinzani after opium had been given in ordinary doses (to $\frac{1}{3}$ grain hypodermically) found no abnormal sleepiness of the child nor any trace of morphin in the milk, and against this the case of Cerenville, where a child, whose nurse had taken

a large dose of morphia for neuralgia, became cyanotic and convulsed, with cyclic respiration and dilatation of the pupils on inspiration, or of Fubini and Cantu, where a child had cyanosis, myosis, and slow pulse and respiration after its nurse had put laudanum-soaked wool in a hollow tooth, are of little value. The latter authors, however, found evidence of morphin in the milk of a goat which had daily doses of $\frac{2}{5}$ and later $\frac{1}{3}$ of a grain of morphia. Equally unsatisfying is the evidence of the isolated case in which a child slept eight hours after its mother had chloroform for afterpains, and the series of observations made by Fehling on the effect of chloral hydrate. Gorup-Besanez states that he distilled ether from the milk, but distaste for and vomiting after the mother's milk are symptoms not confined to the children of women who have had ether during labour. The transmission of potassium bromide seems more probable, but no sufficient positive evidence of it has been adduced. The case is very different with atropin, of which the experimental administration to cats and bitches in each of fifteen cases suspended the vagus inhibition in the young.

Burdel found disturbance in very young children when the mother had taken quinine on an empty stomach, and salicylic acid seems to pass over easily and to be excreted in the child's urine without, however, causing any disturbance. Antipyrin seems to pass into the milk, but in minimal quantities. Kahler had always negative results in his search for mercury in the milk, and there is no evidence for the possibility of treating hereditary syphilis in this way. Iodine has been found in the milk, but always in minimal amount, and potassium iodide passes over easily, and its presence is fairly prolonged, and iodine has been found in the urine of the child after the external use of iodoform for the mother. Two cases of congenital goitre from goitrous mothers improved with the use of thyroid and iodothyrin respectively by the mothers, and Bramwell describes symptoms of thyroidism in a child whose mother was taking thyroid extract for exophthalmic goitre. Arsenic also seems to be transmitted in the milk in small quantities. Neither rhubarb nor sulphate of potash was found to purge the child, and the evidence for senna is not enough. Castor oil, to which popular tradition assigns such active properties, is not dealt with in the paper, probably because no materials were to be found. Thiemich's own observation on the transmission of fats would, however, make an action not improbable. Alcohol was found only in the case of a goat deeply poisoned with it, and santonin has been absent when it was looked for. Positive results have thus in women been got only in the cases of salicylic acid and iodine; and in animals, morphin and atropin.

OPHTHALMOLOGY.

By ANGUS M'GILLIVRAY, C.M., M.D., F.R.S.Ed.,

Lecturer on Ophthalmology, St Andrews University; Surgeon, Dundee Eye Institution; Ophthalmic Surgeon to the Dundee Royal Infirmary, and to the Dundee Institution for the Blind

Gonorrhœa in its Relation to Diseases of the Eye. By Frank Buller, M.D., Montreal, *Annals of Ophthalmology*, July 1900.—Dr Buller describes two forms of inflammation of the eye due to gonorrhœa—one the well-known purulent conjunctivitis, which can usually be traced to direct inoculation, and the other an iritis always occurring in the latter stages of the disease, and usually in connection with other manifestations of gonorrhœal rheumatism. In the iritis the micro-organisms do not directly attack the intraocular tissues, but the eye is irritated by the toxins after systemic infection. The treatment of this latter form does not differ from that of rheumatic iritis except that it is advisable to cure the urethral disease as soon as possible. The author treats the gonorrhœal conjunctivitis in the usual way with nitrate of silver and perchloride of mercury and frequent antiseptic cleansing. He thinks protargol is too recent a therapeutic agent, that its place as a remedy in so serious a malady is not yet well enough established to risk its use.

Two cases of gonorrhœal conjunctivitis of only twenty-four hours' standing are cited. The patients were anæsthetised and the conjunctiva thoroughly washed with perchloride of mercury; the outer canthus was then freely divided so that the lids could be freely everted and every part of the conjunctival sac exposed. After irrigating with water and protecting the cornea with vaseline, the entire conjunctiva was freely swabbed with an eight per cent. solution of nitrate of silver, washed with perchloride of mercury 1 in 2000, and smeared with vaseline; cold compresses were then applied for twenty-four hours. This resulted at the end of twenty-four hours in only a severe muco-purulent conjunctivitis, which disease ran a mild course and terminated in recovery with little impairment of vision. There was some corneal ulceration, but it was not destructive.

In dealing with gonorrhœal conjunctivitis, which fortunately in our experience is one of the rarest of ophthalmic diseases, we concur that energetic treatment is imperative, yet we cannot agree with the author that division of the canthus is necessary in every case. Such treatment should be reserved for cases where it is impossible to apply remedies locally on account of mechanical impediments.

Excision of the Eyeball and Some Alternative Operations. By Frank Buller, M.D., *Montreal Medical Journal.*—According to Buller, Mules' operation of evisceration with insertion of a hollow glass globe in the scleral cavity overcomes in a great measure all the advantages of an enucleation; the cosmetic effect is better in regard to mobility and general appearance, there is no space behind the artificial eye for the accumulation of secretions, and no consequent chronic conjunctival irritation. In those cases in which the operation is followed by sympathetic ophthalmia, the original injury is usually of a sort that would in itself be likely to cause sympathetic ophthalmia. The writer has had only two failures in twenty-six consecutive cases, and both of these were really cases in which evisceration was contra-indicated, viz., one a case of sympathetic panophthalmitis, the other a greatly shrunken eyeball. Excision is only necessary in, and its adoption should be strictly limited to, (*a*) intraocular malignant growths and orbital malignant growths, (*b*) extensively lacerated or contused wounds of the sclerotic, (*c*) shrunken globes in which the uveal tract can not with certainty be completely removed, (*d*) cases where sympathetic diseases have already been excited. In all other cases evisceration with or without the insertion of a sphere should be done.

Hereditary Optic Nerve Atrophy in Three Brothers exposed to Lead Poisoning. By D. Rayner Ratten, M.D., *Ophthalmic Review.*—All three brothers were plumbers, all strong, healthy men. There were no symptoms of constitutional lead poisoning except in one who had a suspicious line on the gums of the upper jaw. There was no evidence of intracranial or other disease. Other members of the family showed no signs of atrophy; their work, however, was of a different kind. The nerve atrophy was marked, and showed no signs of improvement under treatment.

The author thinks them cases of hereditary optic nerve atrophy with lead as an exciting cause.

Ten Years' Surgical Experience in the Mission Hospital, Kashmir. By F. Ernest Neve, M.D., *Indian Medical Gazette.*—Out of about ten thousand cases of eye operations those for trichiasis and entropion were the most frequent, there being over five thousand. The method used is a modification of Arlt's. An incision is made on the conjunctival aspect of the lid near its free edge between the roots of the cilia and the openings of the Meibomian ducts; care is taken not to wound the punctum; the incision passes through the lower part of the tarsal cartilage, thus

dividing the lid into two parts. The anterior part contains the skin, orbicularis muscle, the lower margin of the tarsal cartilage together with the eyelashes, Meibomian glands and ducts and conjunctiva. The skin of the dorsum is then raised and an elliptical portion is removed corresponding to the whole width of the lid, but not including the orbicularis muscle. The amount to be removed depends on the amount of the eversion required. The upper edge of the incision should come as near the eyelashes as possible. The upper and lower edges of the incision are united by three or more sutures. It is a rapid operation, and is usually performed without any anæsthetic.

There were 629 cases of cataract extraction, four were glaucomatous, of which the final result was poor in every instance. He prefers the modified linear incision, with the section as nearly as possible in the corneo-scleral margin; if too peripheral there is a great danger of loss of vitreous. Of 619 cases, no iridectomy was done in 160, in twelve of the series there was subsequent prolapse of the iris, and in twelve others iritis occurred, followed in six cases by total occlusion. Not more than 25 per cent. presented eventually a really central pupil. Some accidents occurred when cocain was used from the patient giving a sudden jerk; in one case during the iridectomy the patient gave a sudden jerk, and the whole of the iris came away. In two others parts of the iris were detached. In the last 319 cases failure occurred in less than 4 per cent.

Extirpation of the Superior Cervical Ganglion of the Sympathetic Nerve in Glaucoma. By Dr M. Mohr, *Annals of Ophthalmology*.—Mohr performed the operation on three cases, in all of which narrowing of the pupil and lowering of tension were observed. In one case the tension went down below normal, but remained there only a short time, when it returned to normal, where it stayed. Unpleasant effects were not observed in any of the cases. While the effect of the operation is undoubtedly beneficial, and while it will probably find a field for usefulness in certain forms of glaucoma, it is as yet too soon to speak positively as to its relative value in the treatment of glaucoma.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

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